

For Reference

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August Issue

Northeastern University Bulletin 1979–1980



The Northeastern University Bulletin contains *current information* regarding programs, curricula, cooperative education opportunities, career opportunities, campus life, and admissions, and such information is not intended to be and should not be relied upon as a statement of the University contractual undertakings.

In reading this Bulletin, whether you are using it to make your selection of a college to attend or are trying to select a career goal, a major, a concentration or even a course, you must keep certain important points in mind.

We at Northeastern will do our best to make available to you the finest education we can provide, the most stimulating atmosphere in which to learn and the most congenial conditions under which you may enjoy the learning experience. But the quality and the rate of progress of your academic career is in large measure dependent upon your own abilities, commitment and effort. You will be a full participant in an educational partnership. We will and, indeed, can only make the opportunities available to you; it is up to you to take advantage of them.

This is equally true with your career upon graduation. While we can offer the opportunity through an ever-improving co-op program for you to acquire work experience which we believe will give you an advantage over some other applicants, we cannot guarantee that you will obtain any particular job; that will depend upon your own skills, achievement, presentation and other factors, such as market conditions at that time. Similarly, in many professions and occupations there are increasing requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These may change during the period of time when you are at Northeastern, and they may vary from state to state. While we will be ready to help you find out about these requirements and changes, it is your responsibility to initiate the inquiry because we cannot know what your expectations and understandings are unless you tell us.

In brief, what we are saying to you is that we are here to offer you educational opportunities and choices and to assist you in finding the direction in which you want to steer your educational experience. But you are a partner in this venture with an obligation and responsibility to yourself.

Northeastern University reserves the right in its sole judgment to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures and standards, degree requirements, fees and academic schedule whenever it is deemed necessary or desirable, including, without limitation, changes in course content, the rescheduling of classes, cancelling of scheduled classes and other academic activities and requiring or affording alternatives for scheduled classes or other academic activities, in any such case giving such notice as is reasonably practicable under the circumstances.

The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing educational or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, which causes include, without limitation, power failure, fire, strikes by University employees or others, damage by the elements, and acts of public authorities. (The University will, however, exert reasonable efforts, when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities or performance, but its inability or failure to do so shall not subject it to liability.)

Northeastern University Basic College Bulletin 1979-1980

College of Arts and Sciences
Boston-Bouvé College
College of Business Administration
College of Criminal Justice
College of Education
College of Engineering
Lincoln College
College of Nursing
College of Pharmacy and
Allied Health Professions



NEW ENGLAND
ASSOCIATION
OF SCHOOLS
AND COLLEGES
ACCREDITED MEMBER

The New England Association of Schools and Colleges accredits schools and colleges in the six New England states. Membership in one of the six regional accrediting associations in the United States indicates that the school or college has been carefully evaluated and found to meet standards agreed upon by qualified educators. Colleges support the efforts of public school and community officials to have their secondary schools meet the standards of membership.

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A Message from the President

Your decision to enter college signifies your commitment to the future, a desire to fulfill your personal aspirations, and a determination to develop fully your talents and potential. College alone will not guarantee the future for you, but the *right* college can help you give shape to the kind of future you want.

At Northeastern University we believe that the best college for students is the one that most provides the educational tools and cultural environment in keeping with their diverse personal goals. Perhaps the most distinctive part of the Northeastern educational experience is its Cooperative Plan of Education, through which students can discover and explore the full range of their interests.

By providing you the opportunity to apply theory to practice, the Cooperative Plan allows you to test the validity of what you have learned in the classroom in a realistic occupational setting. It also permits you to bring the acquired knowledge of practical experience to your studies.

Through the Cooperative Plan, you can test and confirm your professional goals. You may also discover paths leading to careers that you might not otherwise consider.

The Northeastern educational model represents our commitment to education of the highest possible quality. For our students, this means programs that change to meet the changing requirements of the times. It means the frequent introduction of new courses, concepts, and techniques. More important, our commitment to quality education also means providing students superior instruction. Northeastern's faculty members wear the badge of expertise in their own fields. They also share a dedication to their common profession and an interest in the progress and personal achievements of their students.

An equally important characteristic of the Northeastern experience is its urban environment. The University is located in the Back Bay section of Boston, a city long-celebrated as one of the cultural and educational capitals of the nation. Students who come to Boston are a special kind of student, drawn here in part by the excitement of studying in an environment which only a city like ours can provide.

To Northeastern students, this means contact both on and off campus with people from different countries, different cultures, and different walks of life. It means a chance to explore the social, cultural, and intellectual resources of one of the great cities of the modern world. It means the opportunity to keep pace with current events and to live with a past that is still enriched by symbols of the American Revolution, such as Old Ironsides, Faneuil Hall, and the Old North Church.

In short, the Northeastern experience is all these things. Together, they add up to a college education that is not only structured to the requirements of your field of study, but is also shaped by the nature and range of your individual interests. The Northeastern experience can help bring to realization your dreams of the future.

Kenneth G. Ryder

President

Tuition and Regulations

Tuition rates, all fees, rules and regulations, courses and course content are subject to revision by the President and Board of Trustees at any time.

Equal Opportunity Policy

Northeastern University is committed to providing equal opportunity for all. In matters involving admission, registration, and official relationships with students—including evaluation of academic performance—the University insists on a policy of nondiscrimination. Northeastern is also an equal opportunity employer. It is institutional policy that there shall be no discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or on the basis of being a handicapped but otherwise qualified individual. In addition, Northeastern takes affirmative action in recruitment of students and employees. Inquiries concerning our equal opportunity policies may be referred to the University Affirmative Action/Title IX Officer, Ellen S. Jackson, 175 Richards Hall, (617) 437-2780.

The Committee on Admissions
Department of Admissions
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115
Tel. (617) 437-2200

This Bulletin has been designed to help you plan your education and career, as well as provide the information you need to apply for admission.

Naturally, we are enthusiastic about what Northeastern can offer: fully accredited programs in an exciting urban setting, plus something special—the unique learning experience of combined work and study at the institution that developed the Cooperative Education Plan.

We encourage early application for admission and hope we can be of service to you.



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Part One

About Northeastern



About Northeastern

The Philosophy of Education

Northeastern has never forgotten its original purpose: to offer an education to all qualified students who possess both the desire for additional knowledge and the determination to acquire it in spite of possible hardships.

Because Northeastern is fully aware of the importance of using all its resources to help solve monumental — and universal — social problems, its long experience in creating opportunities for productive work as a part of the total educational experience is particularly significant today. The University has also helped many members of minority groups obtain an education.

Northeastern's Boston location and the fact that it is the largest Cooperative Plan university in the world provide opportunities for student involvement in areas of national concern. For example, you as an undergraduate may have cooperative work assignments in such areas as air pollution research, rehabilitation, medical research, social service, environmental studies, and law enforcement. Student activities, too, offer a chance to "be where the action is": namely, in a wide variety of community-action programs, many of which help handicapped people, ghetto residents, and minority groups.

Today's socially conscious students often wish to continue their education to the graduate level. In response to this desire, Northeastern has extended its Co-operative Plan to some areas of graduate education. One example is the School of Law, which offers a curriculum substantially developed around the important social issues of our time.

Many prominent educators, including those who are graduates of traditional, non-Cooperative Plan schools, are now urging that *all* college students may have opportunities for on-the-job experience before graduation. These educators realize that the practical experience thus gained can strengthen college curricula.

Therefore, by alternating between classroom instruction and cooperative assignments, you, as a Northeastern student, could be in a much better position to examine, doubt and explore than your counterpart at other educational institutions. You would have the opportunity to test the opinions you have formed. You see society not for what it is, but for what it can be.



Boston and Northeastern

Northeastern University offers you more than the traditional college education.

The University community includes people from many intellectual, political, economic, racial, ethnic, and religious backgrounds. Its location naturally attracts such a diversified student body and excellent faculty.

Newspapers, magazines, and the other media have spread the word: Boston is where young people are. A mixture of Old World tradition and modern urban America, it is a city where youth can explore a rich and varied history and contribute much to social consciousness. It is the perfect college town, where the past is appreciated, the present enjoyed, and the future anticipated.

Through the Co-op Plan, Northeastern students live in the city, work in the city, and contribute to the city. They may be teacher aides in integrated schools; business administration interns in law offices and accounting firms; nursing trainees in some of the most famous hospitals in the world; engineering co-ops in outstanding corporations.









The City: where you can follow the well-worn cobblestones and bricks from Paul Revere's home to Faneuil Hall, the Common and Beacon Hill; browse in old book shops, wander through art galleries along Newbury Street; shop for food in the outdoor markets of the North End; and buy jeans for sailing along the Charles River or designer originals for an opening night at Symphony, Ballet or the Opera.

You can spend a whole day at our now-famous Quincy Market area,—shopping, sampling food, and browsing, and then, as the night spots come alive, stay on to mingle with Boston's singles.

Everyone knows about Boston's seafood, but you can also try Spanish, Chinese, Greek, German, Italian, and French food, make the round of English pubs, and see the varied architecture of the past (Statehouse, Back Bay, Beacon Hill); and the present (Government Center, Copley Square Plaza, the Prudential Center, the Christian Science Church Complex).



Boston is a city of colleges. Boston University, Simmons College, Emmanuel College, and MIT are within walking distance of Northeastern. So are the Museum of Fine Arts, Symphony Hall, the Gardner Museum, the New England Conservatory of Music, Jordan Hall, Horticultural Hall, the Christian Science Church Complex and the Boston Public Library.



By boarding the subway, students can travel to the theatre district, where pre-Broadway plays "try out," and innovative young artists produce their own contemporary hits.





Sports fans can see four major professional teams in the Boston area. The Bruins and the Celtics play at the Boston Garden, and the Red Sox play their home games within a mile of the Northeastern campus. The New England Patriots play in Foxboro, south of Boston. At the Longwood Cricket Club in Brookline (the next town to Boston), you can see world class tennis every summer. New Hampshire and Vermont offer some of the best skiing in the country. Then, of course, there are crew races on the Charles.



Boston is where
Northeastern is; and
Northeastern is Boston.



The Boston Campus

The fifty-acre Northeastern University campus is located near the border of Boston's downtown and Back Bay districts. It is just far enough from the center of the city to allow for breathing space. However, numerous well-known cultural institutions, such as the Museum of Fine Arts and Symphony Hall, are within walking distance of the University.

The dominant theme in the design of the campus is the central academic area of classroom and laboratory buildings. Having a ten-minute break between classes, students may go from one classroom to another, using convenient walkways and secondary streets. Residential, recreational, and parking facilities are located on the outer portion surrounding the campus' central academic area.



The "front door" of the campus is the Yard or Quadrangle facing Huntington Avenue where transportation is available to and from downtown Boston. The white brick buildings of classical modern architecture provide a unique unity to much of the campus. As a result of an architectural design contest in the early 1930s, the buildings comprising the Quadrangle were erected during the following twenty years. The Boston campus occupies land on which was held the first baseball World Series in 1903.





Large dormitory facilities were added in the early 1960s diagonally across Huntington Avenue from the Quadrangle. During that decade the parking areas were repeatedly relocated to the edge of the campus as many new buildings were added to the central academic area. For this expansion the University was fortunate to acquire a large railroad yard no longer needed by the main line from Boston to New York.

The urban character of Northeastern is reflected both in its academic programs and its physical campus. Although many of the buildings are new, others have been acquired by the University and refurbished. Northeastern began its operations at the Boston YMCA, which is adjacent to the eastern edge of the central academic area. Part of that building is now being used for college programs. On the western edge of the campus is a complex of buildings originally constructed for research and production by the pharmaceutical industry. As is currently happening to many older buildings in America's cities, these structures have been recycled into faculty offices, laboratories, studios, and service areas.

Northeastern will have a second and new "front door" at the border of the campus to the southwest. In that area an important transit line will be relocated on the site of the old railroad bed, and a proposed station at Ruggles Street will also bring together many local bus routes and a commuter rail line from the suburbs. At present, an area for student housing is being established near the station site, highlighted by a new, ten-story apartment-dormitory.

When construction of the new transit services is complete, Northeastern will become much more accessible by public transportation. Commuting will be easier for students who live with their families and for students living independently in surrounding cities. When the need for parking is reduced, additional land will be available for academic buildings, housing, and recreational facilities.



A Student's Voice

Located on Huntington Avenue in the center of Boston is the main campus of one of the nation's largest private universities: Northeastern University, with a student population of more than 15,000 day students.

Each year literally thousands of new and returning students enroll at Northeastern. These students are primarily from the cities and towns of New England, and the remainder from across this country, as well as abroad. More than 1,700 foreign students are currently enrolled at Northeastern.

What attracts so many of us to Northeastern? There are many answers to that question. Academically, Northeastern University offers its students a variety of degrees, from Associate to Doctorate.

One of the many features that gives Northeastern much of its acclaim is its Cooperative Education Program. Through this Plan, students have the opportunity to gain valuable work experience in their field of study, whether it be engineering, business, liberal arts, the health-related fields, or any of the many other diversified curricula. Students are given the opportunity to work in the Boston area, as well as throughout the United States. Through this work experience, students may often gain a head start on the job market upon graduation.

As a public administration major, I have had co-op jobs in federal, state, and local government offices.

Northeastern University has much more to offer its students than just academics and its world-famous Cooperative Plan. There are numerous clubs and activities in which students may become involved; after all, an education is not only what is found in textbooks. While a student at Northeastern, I have become involved in several activities, among them the Student Federation (the student government). This organization was instrumental in establishing a University-wide Teacher/Course Evaluation system, an MBTA pass program for commuting students, and a fully staffed Day-Care Center, to name a few.

Northeastern's Boston location has much, culturally as well as socially, to offer students. Many fine museums, and historical and cultural sites, are located in Boston. Examples are the Museum of Fine Arts, Symphony Hall, the Old North Church and Paul Revere's house, and the New England and Boston Conservatories of Music. And if it is entertainment you want, Boston offers that with a variety of concerts, movies, theaters, and night clubs.

The combination of an excellent education at Northeastern, work, and an ideal city — Boston — what more can a student ask for?

Martha Fox



The Faculty— Scholars, Innovators, Advisers

Coming from almost every state in the nation and numerous foreign countries, Northeastern faculty members are chosen for their enthusiasm for teaching, their ability to stimulate intellectual and scientific curiosity, and a genuine desire to understand young people.

Northeastern faculty constantly reexamine and reevaluate curriculum to keep pace with the changing needs of students. As a result of this practice, many opportunities, which few other institutions can provide, are available here. As a student in the College of Arts and Sciences, you may, if qualified, engage in undergraduate study not provided in conventional degree programs by developing an "Independent Major" with the assistance of a faculty adviser and the counseling services of the Dean's Office. More information on the Independent Major may be found on page 109.

In the College of Engineering, assistance in selecting courses and choosing a major begins in the freshman year. Faculty advisers, each responsible for a small group of freshmen students, work under the direction of the staff of the Dean of Students, with the assistance of the Dean's staff in the College of Engineering. Upperclass students are assigned faculty advisers from their major department. The College of Engineering curriculum, under constant review by the departments, is frequently revised to keep current with developments in the field. For example, computer science has been included as an option in the General Engineering Program, and computer engineering has been added to the Electrical Engineering Program. A series of courses in Alternate Energy Sources is being introduced into several of the Engineering Departments.

The College of Business Administration offers a variety of concentrations, plus an option for those who prefer a more general background in management. If you need academic counseling, the Student Personnel Office of the College offers its services on an open-door basis. There is also a Student Advisory Committee which represents your interests and viewpoints and prepares student/teacher course evaluations.

Cooperative work experience is particularly important for students in the College of Education. Opportunities are available for selected students to receive assignment in cooperative school systems, social agencies, hospitals, or libraries. In these settings, students may enjoy unique experiences which greatly enhance self-confidence and professional growth.

The Colleges of Education, and Arts and Sciences offer an undergraduate major in Human Services to students who, in addition to meeting the requirements of their "home" college, take courses in both colleges. In their junior and senior years, Human Services majors must participate in supervised work experiences. For details of the program, see page 129.

Northeastern's College of Nursing Programs were the first in the country to be offered on a "co-op" basis. Through affiliation with health-care agencies in the Greater Boston area, students are provided a variety of clinical experience settings. Students are assigned a faculty adviser to assist in their career development. The College encourages student representation on the majority of its standing committees.

As a Physical Education student, you may specialize at the elementary or secondary level, or graduate as a generalist. You may now also select concentrations in dance, science, coaching, athletic training, or other possibilities as second teaching areas. The Health Education Program offers you the



opportunity to prepare yourself for teaching at the elementary or secondary level in public or private schools. In addition, the Program offers you an alternative choice of preparing yourself as a Health Educator in a Community Agency or setting.

The Department of Physical Therapy offers the only program in the United States developed on the Cooperative Plan with alternating work-study experiences related to the curriculum, thus strengthening classroom and laboratory learning. In fact, all four departments in Boston-Bouvé College are offered on the five-year plan. Recreation students may select one of three tracks as specialization — Therapeutic Recreation, Community Recreation, or Outdoor Education and Recreation.

When you are a pharmacy major, you may select courses in clinical and hospital pharmacy, community pharmacy, or areas which may give you the opportunity to prepare for a research career in one of the pharmaceutical sciences. The program also includes the possibility of taking courses from other schools within the University.

Lincoln College's Bachelor of Engineering Technology (BET) Program is distinctly different from typical engineering curricula. The technology programs provide an opportunity to prepare yourself for what can be a unique and pivotal position on the professional-technologist-craftsman team. The freshman year of the BET program contains course work which can also be used as excellent preparation for entering colleges of engineering.

The Cooperative Plan and a combination of applied and theoretical courses contribute to the academic program at the College of Criminal Justice. Graduates have found careers in law enforcement, private retail security, criminalistics, corrections, rehabilitation and social services, as well as many other areas of the criminal justice system. Because of the academic nature of the program, many students have also undertaken graduate study in criminology, law, public affairs and social work.

Those of you in Allied Health Professions may prepare yourself through classroom study and clinical experience to assume a professional role in one of today's health fields. The programs in Medical Laboratory Science, including medical technology and cytotechnology, offer you the opportunity to prepare yourself for laboratory duties at several levels, by combining internship with co-op positions or part-time jobs during your baccalaureate degree program. Upon graduation, you may wish to take national certification examinations or pursue a graduate study program. The Health Record Administration Program offers you the opportunity to prepare yourself for a variety of positions in the area of documentation of health care. Upon graduation from this program, you are eligible for the National Registration Examination.

An Associate of Science degree has been awarded to students majoring in respiratory therapy at Northeastern University since 1967. Recently a five-year baccalaureate program has been established to provide a continuation of professional training beyond the Associate Degree level. The Bachelor of Science degree in Respiratory Therapy has been implemented due to the demand for increasingly sophisticated techniques in the field.

A new Bachelor of Science degree program in Toxicology has been coordinated into the College of Pharmacy and Allied Health Professions. This program emphasizes the areas of clinical, environmental, forensic, and industrial toxicology, thereby offering the student employment opportunities in clinical, government, and industrial settings monitoring products for the hazardous effects of chemicals.

It has been said that "the most essential thing in the work of education is that sympathetic touch of life on life. It is by that fine process that personality is developed, matured, and enriched in all the younger candidates for human existence."

One reason for the success of the Cooperative Plan at Northeastern University is the "touch of life on life" which is made possible by the close association between more than 700 scholars on the faculty of the Basic Colleges and their students. When you enter Northeastern, you are assigned an academic adviser who works with you during your freshman year on a wide variety of problems concerning your personal and academic development. You are also given the opportunity for academic counseling throughout your upper-class years. Obviously it is the student's responsibility to take advantage of these opportunities.



Research

Scholarly endeavors of the faculty are an important aspect of any university. Through research, faculty members are able to stay abreast in the fast-changing body of knowledge in their particular field. The vitality of a university is enhanced by scholars doing research while concurrently teaching in the same field.

Northeastern University has a broad program in research. More than \$8 million in outside support is received by faculty members in virtually all departments of each College. Support comes from such agencies as the National Science Foundation, National Institute of Health, Office of Education, as well as private industry, foundations, and the University itself. Opportunities exist for undergraduate students to work on particular projects, either as part of their regular academic program or as their cooperative job assignment. Graduate students also play a significant role in research.

A list of these projects includes fundamental studies in nuclear physics, mathematics, labor economics, solid-state theory, microelectronics, the effect of plasma on reentry communications, cancer, modification of visual threshold under hypnosis, separation science, and metallic glasses.

Northeastern University has numerous distinguished faculty members, many of whom have been honored with outstanding awards, including Sloan Fellowships, and National Institute of Health Career Research Awards. Faculty present lectures literally the world over, from Moscow to Paris to Sidney, Australia. In addition, members serve as United States government consultants and participate on many national and international committees. You will be proud to know these men and women as professors in your classrooms.

The Cooperative Plan

The Cooperative Plan brings relevance to your college education. By scheduling an alternating pattern between classwork and off-campus experiences, Northeastern helps you to develop personal maturity and realize your potential. The process itself—as you compare classroom theory with its realistic application—enlivens class work. Upon graduation you will not only have a degree, but also valuable experience to offer a potential full-time employer. In addition, the money you may earn on cooperative assignments can help to defray the cost of tuition, books, and incidentals.

You will be assigned to a faculty coordinator who is responsible for all phases of your cooperative program and assists you in gaining maximum value from your education at Northeastern. Personal interviews, in which your academic progress and evaluations of your previous work experiences are reviewed, provide the basis for referral to specific opportunities that could help you realize your career objectives. Your coordinator is a specialist who keeps abreast of activities in specific areas of responsibility so that counseling on opportunities and trends in these areas can be provided. In general, starting assignments tend to be of a routine nature, to be followed by increasingly professional applications as your education and abilities increase. Subject to economic conditions and your willingness to consider alternative opportunities, you can expect to work on responsible and challenging assignments during participation in the program.

At some point in your program, you may wish to participate in an activity other than paid employment during a cooperative period. You may wish to travel abroad, spending time in one or several foreign countries learning about the customs, the culture, and the people. You may wish to volunteer your services to your local hospital or spend some time on an Indian reservation in the Southwest. Or you may wish to take specialized courses at another institution. Time to engage in these and similar activities can be arranged with your coordinator as a part of your Cooperative Education Program.

Most cooperative curricula leading to the baccalaureate degree require five years. Programs consist of a freshman year of three consecutive quarters of full-time study followed by four upper-class years in which you alternate periods of classroom attendance at Northeastern with periods on cooperative assignment. Some programs vary slightly from this pattern to meet professional requirements in their particular fields.

Associate degree programs in Allied Health Professions require three years to complete, with two upper-class years “on co-op.”

Participation in the Cooperative Plan is a requirement for all students in the Basic Colleges except those enrolled in the College of Liberal Arts. Liberal Arts students may select a “full-time” program in which eight quarters of upper-class study may be completed in three years. However, the majority of Liberal Arts students take advantage of the Cooperative Plan.

Further details on the cooperative program are available in a booklet entitled *Co-opportunities* which the Department of Admissions will be happy to send you on request.



Alumni Association

More than 82,000 alumni are united within an Alumni Association, created to establish a mutually beneficial relationship between Northeastern and its graduates. The Association is governed by an Executive Committee elected from the alumni community. Membership to the Association is automatic upon graduation.

The Association is headquartered in the Office of Alumni Relations. The official records and addresses of alumni are maintained in the Office of Alumni Records, Room 260, United Realty Building.

Activities of the Association include the Homecoming celebration, presentation of the Outstanding Alumni Awards, and the annual presentation of Professional Promise Awards to outstanding seniors in each of the Colleges. Alumni officers are also involved in establishing diverse continuing education programs to meet the contemporary vocational and avocational needs of Northeastern's graduates. The Alumni Association has also initiated a successful group travel program to provide the alumni of Northeastern with interesting, economical opportunities in foreign travel. Notice of all activities is provided in *Northeastern Today*, the alumni magazine, and in special publications.

Regional alumni clubs have been established from coast to coast. All alumni are eligible to become members of these organizations. The clubs meet periodically with a varied program, often in conjunction with professional and athletic events, faculty visits, and service projects. Additionally, alumni class organizations conduct reunions for their respective classes every five years.

The Association sponsors and assists constituent organizations, that focus on common professional and avocational interests and college affiliations. These groups have their own officers and conduct various programs throughout the year.

The Alumni Association provides a valuable service to the University and the community by sponsoring regional admissions conferences for high school students and the parents of students who are interested in attending college. Alumni volunteers also serve the student body through programs of individual career counseling, welcoming international students and greeting students when they embark on a co-op assignment in an unfamiliar locale. In addition, alumni volunteers in many metropolitan areas across the nation represent the Admissions Office on a continuing basis at high schools and community colleges.

Part Two

Academic Programs



Academic Programs

Quarter-Hour Credits

Northeastern University operates on a quarter-system calendar.

All courses are evaluated in terms of quarter-hour credit. A quarter-hour credit is equal to three-fourths of a semester hour credit.

Classes at Northeastern are scheduled in different modules.

In assessing quarter-hour weights for courses, the following statement applies.

One quarter-hour of credit is equal to 50 minutes of instruction per week, plus two hours of preparation.

Tuition and Regulations

Tuition rates, all fees, rules and regulations, courses and course content are subject to revision by the President and Board of Trustees at any time.

Boston-Bouvé College

Paul M. Lepley, Ed.D., *Dean and Director of the Graduate School*
Jean Czajkowski, *Assistant to the Dean*

Professional Preparation

After half a century of excellence as a college of physical education and physical therapy for women, Boston-Bouvé College merged with Northeastern University in July, 1964. From its very beginning in 1913, it stressed health education, recreation, winter sports, camping, and therapeutic exercise.

Aims Today, Boston-Bouvé College of Northeastern University is coeducational with four undergraduate departments — Health Education, Physical Education, Physical Therapy, and Recreation and Leisure Studies. The College also has graduate programs in Physical Education and Recreation and Leisure Studies, with the Master of Science Degree conferred.

The primary goal of the College is to provide the very finest education for every student. To meet demands for fully qualified personnel in Health Education, Physical Education, Physical Therapy, and Recreation and Leisure Studies, the College strives to develop the independent, self-reliant individual.

A View of the Five-Year Program Professional preparation is based in the liberal arts and sciences, with orientation to each profession beginning in the freshman year. There is a concentration on specific essential skills spaced throughout the programs and on professional theory and practice in the last two years. In the junior or senior year, all students have the opportunity to synthesize knowledge and skills through supervised experiences in clinical practice in Physical Therapy, student teaching in Physical Education, field experience in Recreation and Leisure Studies, and student teaching or field experience in School and Community Health Education. Each curriculum is enriched by co-operative experiences which, for the most part, are related to a student's area of specialization. At times, co-op is professionally unrelated, but it is always concerned with people, thus providing an opportunity of inestimable value in any career.

Facilities

The facilities of the College are quite diversified. Dockser Hall houses administrative and faculty offices, reading rooms, gymnasium, dance studio, physiology of exercise laboratory, classrooms, locker and shower facilities, as well as a community recreation laboratory, arts and crafts area, and seminar rooms. The swimming pool, weight room, handball courts, offices, shower and dressing facilities are located in the Barletta Natatorium complex. The Cabot building attached to Barletta contains one very large gymnasium, and another well-equipped for gymnastics, wrestling, boxing and weight training rooms, an indoor track and activity area, offices, and extensive locker room space.

The Physical Therapy Department is located in Mary Gass Robinson Hall. On the third and fourth floors are the physical therapy faculty offices, a library, classrooms, and three laboratories. The laboratories are specially designed and are well equipped for the practice of clinical procedures. In addition, there is the attractive Lupean Professional Library. This reading room maintains an up-to-date collection of physical therapy and medical books for use by stu-



dents and faculty in the program and the College, and supplements the University's Library. Some rooms in Robinson Hall are wired for closed circuit television to carry programs pertinent to the profession.

The Warren Center serves as a practical laboratory for the College. Its athletic fields and tennis courts, natural setting of lake, woods, fields and streams, winterized cottages, and Hayden Lodge provide year-round opportunities for outdoor learning 25 miles from the Boston campus. Courses, conferences, seminars, and workshops are conducted at the Center throughout the year and thus serve University and community needs.

Admission

See page 178 for statements concerning admission. In the third year, prior to the first supervised clinical education experience, Physical Therapy students must be examined either by physicians in the University Health Services, at a moderate fee, or by a personal physician.

Graduation Requirements

Degrees Students graduating in Physical Education, Recreation and Leisure Studies, or Health Education earn the degree of Bachelor of Science in Education, and students graduating in Physical Therapy receive the degree of Bachelor of Science in Physical Therapy. These degrees are awarded to qualified candidates who have completed the curricula as prescribed. Student teaching, field experience or clinical practice is an integral part of the curriculum and is required for graduation.

Qualifications

Quantitative The quarter hours required in each curriculum differ.

	Q.H.
Health Education	175
Physical Education/Athletic Training	180/185
Physical Therapy	169
Recreation and Leisure Studies	172

Students must satisfy the requirements of the Department of Cooperative Education before they become eligible for their degrees.

Senior-year course work and required experiences must be completed in full-time residence at Northeastern University, or in an educational setting approved by the college.

Qualitative The overall cumulative quality point averages required to enter each class level are explicitly stated in the Student Handbook. Throughout the professional sequence, students must maintain required averages and demonstrate a high level of personal and professional maturity to continue field practice and be approved for graduation. Because of accreditation recommendations and differences in curricula, qualitative requirement variations may occur.

Transfer students in any curriculum may be accepted into the College at upper-class levels if there are available spaces. Each transcript is individually assessed for qualification, placement, and course design.

Graduation with Honor

Candidates who have attained superior grades in their academic work will be graduated with honor. Upon special vote of the faculty, a number of this group may be graduated with high honor or highest honor. Students must have been in attendance at the University for at least six quarters before they become eligible for honors at graduation.

Program Accreditation

The curriculum in Physical Therapy is accredited by the American Physical Therapy Association. Physical Education and Health Education are accredited by the National Council for Accreditation of Teacher Education and the Interstate Certification Compact/National Association of State Directors of Teacher Education and Certification. Outdoor Education is accredited by the National Council for Accreditation of Teacher Education.

Licensure/Registration

Each of the fifty states has a law governing the practice of physical therapy. In order to be eligible for employment to practice physical therapy, graduates must meet the requirements of the law of the state in which they wish to work. In most states the requirements include graduation from an accredited school of physical therapy and a satisfactory grade on a written examination. Graduates are responsible for finding out what the specific legal requirements are to practice in the state in which they seek employment.

Certification

Upon successful completion of the Physical Education or Health Education requirements, students receive certification by the Commonwealth of Massachusetts. Certification is required for public school teaching, but does not guarantee a position. Reciprocal certification is available in many states of the United States. Graduates are responsible for finding out the requirements of the states in which they are interested in teaching.

Focus on the Student

There is a uniqueness about Boston-Bouvé. Perhaps it is the personal touch, a keen interest in every young man and woman, expressed in individualized advice and counsel. The College has its own professional clubs and Dance Theatre. Its social clubs and exciting assemblies contrast with study rooms, seminars, and places for research. There is skiing in winter, camping in summer, and year-round sports.

Community service is stressed in every department—service to the retarded, the physically handicapped, inner-city youth, and the aging.



School and Community Health Education Department

Keith A. Howell, Ph.D., *Professor and Chairman*

Professor

H. Marie Garrity, Ed.D.

Adjunct Professor

Elizabeth A. Neilson, Ed.D.

Assistant Professor

Sally J. Sparks, M.S.

Instructor

Sheila G. McNeil, M.Ed.

Lecturer

Allen B. Fleming, M.Ed.

Professional Preparation

Aims Health Education is a teaching profession. It is concerned with teaching not only in elementary and secondary schools, colleges and universities, but also in community and continuing education centers and a diversity of agencies and institutions.

Description of Major The program of study is an integration of liberal arts and sciences concentrated in the first two years, with professional courses emphasized in the last three. Health Education courses, however, begin in the freshman year.

A View of the Five-Year Major Cooperative education offers periods of work which may often assist the student in financing his/her education. In the senior year, every major synthesizes theory and practice in student teaching in the schools or in field experience in centers, agencies, and institutions.

The way of life that individuals choose in health habits will affect all that they do and become. The health educator teaches people about health concepts and health maintenance—how to solve personal or family health problems, to use health services, to become involved in the health of the community—with the goal of increasing individual potential for a full and useful life.

College and University Services

The Department of Health Education conducts the required health courses for professional students in Physical Therapy, Physical Education, and Recreation and Leisure Studies in Boston-Bouvé College and in the College of Pharmacy and Allied Health Professions. Electives in health are offered to all University students.

A wide range of courses is offered in such areas as human sexuality, drug use and abuse, mental health, longevity and aging, health concerns of youth, and nutrition. They may be taken as University electives.

Special Requirements

All students in Health Education are required to have a full health examination prior to admission.

An appropriate activity uniform for Physical Education is required at a cost of approximately \$25.00



Program Accreditation

The professional program in Health Education is accredited by the National Council for Accreditation of Teacher Education and the Interstate Certification Compact/National Association of State Directors of Teacher Education and Certification.

Certification

Upon successful completion of the Health Education requirements for graduation, including student teaching, students receive Massachusetts Certification and are eligible to teach in Massachusetts public schools. Certification does not guarantee a position.

Sample Freshman-Year Program of Studies in School and Community Health Education

First Quarter

General Chemistry
English
Education and Social Science
Health Education
First Aid
Physical Education

Third Quarter

Health Concerns of Youth
Biology
English
Mathematics or General
Studies Elective
Physical Education

Second Quarter

General Chemistry
Biology
Education and Social Science Elective
Instructional Resources
Introduction to Safety
Foundations Health Education

In addition to the above courses, a student may elect to take Basic ROTC.

Basic Course Requirements**I. General (and Professionally Related) Requirements**

Course	Q.H.	Course	Q.H.
*General Chemistry	6	*Social Science	8
*English	8	†Human Development	8
*Biology	8	Measurement and Evaluation	4
Microbiology	4	Introduction to Special	
*Mathematics	4	Education	4
†Psychology	8	Humanistic Foundations	4
Anthropology	4	Physical Education	2-5
†Anatomy and Physiology	12	General Studies electives	20

In accordance with NCATE recommendations on general studies, a student should take at least one course each in the symbolics of information, natural sciences, behavioral sciences, and the humanities (from among electives to fulfill requirements).

II. Professional Requirements—Teaching Specialty

Course	Q.H.	Course	Q.H.
*Foundations of Health Education	2	Evolving Patterns of Community Health	4
Human Sexuality/Family	4	Organization and Administration of School and Community Health Education	4
Drug Use and Abuse	4	*First Aid	2
Mental Health	4	*Instructional Resources	2
†Nutrition	4	*Health Concerns of Youth	4
Seminar in Health Education	4	Concepts in Health, Aging, and Longevity	4
Health Counseling	4	Practicum in School Health	12
Teaching Procedures/ Curriculum		Practicum in Community Health	12
Health Education for School and Community	4		
Communicable/Degenerative Diseases	4		
Introduction to Safety	2		

* Courses are usually taken in the freshman year.

† Courses, taken in the sophomore year, are professionally related; Anatomy and Physiology, for example. Health concentration begins in the third year.

Physical Education Department

Carl S. Christensen, Ph.D., *Professor and Chairman*

Professors

John W. Fox, Ed.D.
Kathryn Luttgens, Ph.D.
Jeanne L. Rowlands, M.A.
Richard C. Zobel, Ed.D.

Associate Professors

Robert S. Curtin, Ed.D.
Estelle M. Fotsch, Ph.D.
Dorett M. Hope, Ed.D.
William J. Gillespie, Ed.D.
Kerkor Kassabian, Ed.M.
Mary Nicholson, M.S.
Harold A. Walker, A.B.

Assistant Professors

Glenn A. Boden, M.Ed.
Marilyn Cairns, M.S.
Evelyn B. Howard, M.S.
Marie Lintner, Ph.D.
Hugh McCracken, M.S.
Judith Noblitt, M.Ed.

Instructors

Steven E. Garner, M.S.

Professional Preparation

The Department of Physical Education conducts the undergraduate professional program for students majoring in Physical Education, electives for all University students and the intramural/club program for men and women.

Aims The professional program in Physical Education is designed to offer students the opportunity to prepare themselves as specialists capable of developing the materials and methods appropriate to teaching physical education in public and private schools at all levels — elementary, secondary, and college. Its graduates are qualified as athletic coaches and/or trainers, physical education teachers, directors of athletics, supervisors of physical education, and leaders in YMCA and YWCA and other youth organizations.

Description of Major Students majoring in this program receive a strong background in general education. Elective hours are required in the areas of Science, Social Science, and Humanities. Courses in Physical Education include History, Philosophy, Principles, Curriculum Development and Class Procedures, Measurement and Evaluation, Kinesiology, Exercise Physiology, and Perceptual-Motor Development. Students receive instruction in the techniques of coaching the various individual, dual, and team sports, and in adapting these activities to the needs of the handicapped. Because of the close and overlapping relationship among the fields of Physical Education, Health, and Recreation; Physical Education majors may take courses in these areas.

Areas of emphasis in Physical Education include Athletic Training, Dance or the Foundation Sciences with concentration in the elementary school, secondary school, or generalist program. Class advisers are available to assist students as selections are made.

A View of the Five-Year Major The development and demonstration of personal skill in performance and teaching are an integral part of the professional program. Each student is expected to demonstrate a level of personal skill proficiency and knowledge competency in Swimming, Gymnastics, Track, Badminton, Tennis, Rhythmics, Volleyball, Basketball, Conditioning, Dance, and two Team Sports. The degree of skill may be demonstrated through competency testing or by taking appropriate electives.* Major students are assigned supervised student teaching responsibilities in elementary and/or



secondary schools throughout the Greater Boston area. In addition, students increase their experience with children through their cooperative work assignments and as counselors in summer camps.

Clothing appropriate for physical activity classes is required. Fees may be assessed in courses requiring highly specialized equipment, supplies, or off-campus facilities. In the spring quarter of the freshman year, there is a required one-week resident program at the Warren Center. An additional fee is charged for room and board.

* *To qualify for beginning swimming, dance, and gymnastics courses, Physical Education majors must demonstrate competence.*

Program Accreditation

The professional program in Physical Education is accredited by the National Council for Accreditation for Teacher Education, and the Interstate Certification Compact/National Association of State Directors of Teacher Education and Certification.

Certification

Upon successful completion of the Physical Education requirements for graduation, students receive Massachusetts Certification and are eligible to teach in Massachusetts public schools. Those who have completed the Athletic Training area of emphasis within the physical education curriculum are eligible to apply to the National Athletic Trainers Association to take the certification examination. Certification in Physical Education and/or Athletic Training does not guarantee a position.

Electives in Physical Education

A broad selection of electives in dance, sports, games, aquatics, and gymnastics is offered for all University students. All classes are open to men or to women with instructional modifications where appropriate.

Focus in the elective program is placed on the lifetime use of sports, dance, and aquatics for recreational satisfaction and participation. Classes are subject to cancellation if enrollments are too low.

Modern Dance Theatre and Jazz Dance Company

The Northeastern University Modern Dance Theatre and Jazz Dance Company afford an opportunity to those students interested in dance as a performing art to choreograph and/or perform in concert. In addition to an annual concert production, these two groups present several lecture-demonstrations and/or concerts each year. Admission is by audition.

Intramural and Extramural Sports

A comprehensive program of intramural and extramural sports is provided students through the media of clubs, leagues, and individual participation. Separate leagues are organized for commuters and dormitory and fraternity students. Intramural sports are organized separately both for men and women and on a coeducational basis in some activities. Throughout the year, intramural and club participation may be possible in badminton, basketball, fencing, football, golf, gymnastics, modern and jazz dance, swimming, volleyball, and water polo. A "drop-in" program for individual leisure physical activity is also provided.

Sample Freshman-Year Program of Studies in Physical Education**First Quarter**

English I
Biology I
Social Science I
Human Movement
Prof. Skills Electives

Second Quarter

Career/Life Planning
English II
Biology II or Chemistry
or Physics
General Studies
Elective
Prof. Skills Electives

Third Quarter

Health Problems of
the College Student
Mathematics
Group Dyn. Practicum
History/Philosophy
First Aid
Prof. Skills Electives

In addition to the above courses, a student may elect to take Basic ROTC.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
*English I & II	8	*Health Problems of the College Student	3
*Biology I	4	†Human Devel. I & II	8
Biology II, Chemistry or Physics	4	†Ed. Stat.	4
*Social Science I	4	*Mathematics	4
		General Electives	20

II. Professional Requirements

Course	Q.H.	Course	Q.H.
*Human Movement	3	Kinesiology I and II	8
*Life/Career Planning	3	Measurement and Evaluation	4
*Group Dynamic and Practicum	3	Historical Prin./Phil.	3
Psych. Elective	4	Exercise Physiology I and II	8
*First Aid	2	Theory of Coaching/Play	2
†Anatomy and Physiology I & II	8	Elementary School Activities	4
Adapted PE I	4	Athletic Training	3
Motor Development	4	Administration of PE	4
Motor Learning	4	Curricula Development	3
Critical Teaching Skills	3	Student Teaching	12
14 Prof. Skill Electives	14	4 Teaching, Analysis/Coaching	8
Boston-Bouvé Electives	10		

*Courses are usually taken in the freshman year.

†Courses are usually taken in the sophomore year.

Curriculum may be altered due to changes in state certification regulations.



Physical Therapy Department

Pauline A. Cerasoli, M.S., *Associate Professor and Chairperson*

Professors

Elizabeth J. Fellows, M.A.
Elizabeth W. Van Slyck, M.A.

Associate Professors

Ruth P. Hall, B.S.

Assistant Professors

Catherine M. E. Certo, M.S.
Janice L. Foster, M.S.

Visiting Professor

Whitney R. Powers, Ph.D.

Instructors

Marie C. Winston, M.S.
Philip L. Witt, M.S.

Professional Preparation

Aims The Department of Physical Therapy is dedicated to the preparation of therapists who can provide services of the highest quality in a time of changing concepts, new trends, and new challenges. Students will have the opportunity to acquire the skill to help a patient gain functional independence, and also the opportunity to learn to recognize and assist with emotional and socioeconomic problems that affect recovery.

Description of Major Physical Therapy is one of the health professions contributing to the delivery of comprehensive health care. The physical therapist is highly skilled in evaluation procedures and in the planning and execution of treatment programs appropriate to the condition or disabilities of a patient. In addition, the responsibilities may include health care planning and community service. The qualified physical therapist administers physical therapy only upon referral by a physician.

Physical therapists are employed in general hospitals, children's hospitals, university hospitals, rehabilitation centers, schools or centers for crippled children, nursing homes, extended care facilities, and community, state, and governmental agencies. In addition, there are increasing opportunities in teaching and research in physical therapy.

A View of the Five-Year Major The five-year program in Physical Therapy, based on the Cooperative Plan, is unique in physical therapy education.

The program of study is an integration of liberal arts and sciences and professional courses, with major emphasis on liberal arts in the first two years of the program and on professional preparation in the last three years. The professional courses include such subjects as Anatomy, Kinesiology, Pathology, Clinical Medicine, Neurology, Orthopedics, Physiology, Physical Therapy Procedures, Administration, and practical experience in various hospitals and clinics.

Lecturers from Tufts University School of Medicine and the New England Medical Center Hospitals, as well as from medical and social agencies in the Boston area, augment the professional staff in the Physical Therapy program.

Supervised clinical education is a strong component of the curriculum and a requirement for graduation. Clinical experience provides the student with opportunities to practice various phases of physical therapy under supervision in preparation for qualifying as a physical therapist. Assignments in clinical

education are not confined to the Boston area. They may include physical therapy departments throughout the country, particularly in many states along the eastern seaboard.

Students admitted to the Department of Physical Therapy must maintain acceptable standards of scholarship and performance in the prescribed program. They must also demonstrate good health, verbal fluency, essential motor skills, and emotional maturity; they must complete all required courses and have a favorable evaluation from clinical practice and co-op experience. To continue in the program, students are required to attain and maintain a grade of C or better in professional courses.

Uniforms Students wear a specified uniform for all Physical Therapy laboratory classes, beginning in the freshman year. Men wear navy blue shorts and white T-shirts; women wear navy blue shorts and white halter tops.

Clinical Education Students on clinical education assignments should plan on additional expenses, including travel.

Accreditation

The program is accredited by the American Physical Therapy Association. Graduates are eligible to apply for state licensure or registration and for membership in the American Physical Therapy Association.

Licensure/Registration

Each of the fifty states has a law governing the practice of physical therapy. In order to be eligible for employment to practice physical therapy, graduates must meet the requirements of the law of the state in which they wish to work. In most states, the requirements include graduation from an accredited school of physical therapy and a satisfactory grade on a written examination. Graduates are responsible for finding out what the specific legal requirements are to practice in the state in which they seek employment.

Sample Freshman-Year Program of Studies in Physical Therapy

First Quarter

Foundations of Psychology I
Fundamentals of Mathematics
Basic Animal Biology
Health Education
First Aid

Third Quarter

General Chemistry
Basic Animal Biology
English

Second Quarter

Fundamentals of Mathematics
General Chemistry
English
Introduction to Physical Therapy

In addition to the above courses, a student may elect to take Basic ROTC.



Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
*Fundamentals of Mathematics	8	**Basic Physics	9
*Basic Animal Biology	8	**Human Physiology	8
*English	8	**Human Anatomy	4
*General Chemistry	10	*Foundations of Psychology I	4
*Health Education	3	4 General Electives	16
First Aid	2	**Foundations of Psychology II	4

II. Professional Requirements

Course	Q.H.	Course	Q.H.
*Introduction to Physical Therapy	2	Advanced Therapeutic Exercise	4
**Introduction to Physical Therapy	2	Neuroanatomy	3
**Perceptual and Motor Learning	3	Integration of Therapeutic Exercise	2
Gross Anatomy	6	Electrical Testing and Treatment Procedures	2
Physiology for Physical Therapists	3	Research Design	4
Massage	2	Psychosocial Aspects of Illness	3
Pathology	3	Physical Therapy in the Health Care System	3
Clinical Medicine I, II, III	8	Supervised Clinical Education	5
Clinical Psychiatry	2	Clinical Seminar	3
Applied Anatomy	4	Administration	3
Basic Therapeutic Exercise	4	Investigative Studies	6
Evaluation Procedures	3		
Prosthetics/Orthotics and Functional Activities	3		
Management of Medical/Surgical Respiratory Disorders	2		

*These courses are usually taken in the freshman year.

**These courses are usually taken in the sophomore year.

Department of Recreation and Leisure Studies

James F. Murphy, Ph.D., *Professor and Chairman*

Associate Professors

Elaine Eliopoulos, M.S.

Peter Graham, Ed.D.

Richard B. Morrison, Ed.D.

Frank Robinson, M.S.

Assistant Professors

George Atkinson, M.S.

Robert C. Hayes, Ed.D.

Instructor

L. Marie Magleby, M.Ed., M.F.S.

Professional Preparation

Aims Recreation is a vital profession for a rapidly changing world. Prospects for the future clearly point toward an increase in leisure time and more income available for it. Public recognition of the need for trained administrators in this area, for people of all ages during all seasons of the year, has created new demands for career personnel.

Description of Major Government agencies and educational institutions are expanding their programs. Recreation specialists are employed in community organizations, schools, business, and industry. Some individuals work in the Red Cross, Peace Corps, and Armed Forces; in camps, resorts, and parks; in departments of recreation in schools and colleges; in new recreation centers developed by youth groups; and in state, regional, and national parks.

A View of the Five-Year Major The cooperative program of study is based in the liberal arts and sciences, with courses in professional education beginning in the freshman year.

The opportunity to acquire knowledge and skills in arts and crafts, camping, dramatics, music, sports, dance, aquatics, hobbies, and therapeutic recreation for special groups is combined with training in leadership, organization, and administration.

Outdoor education, camp counseling, school camping, recreation, and park programming are essential aspects of the curriculum, and the Warren Center of Northeastern University offers an excellent and unique teaching-learning laboratory within easy commuting distance of Boston.

Supervised Field Experience, indoors and outdoors, provides both exciting and practical opportunities to work with children, youth, and adults. In addition, the Cooperative Plan offers an opportunity for practical, on-the-job experience in youth agencies, municipal recreation departments, hospitals and institutions, homes for the aging, and other selected settings.

Undergraduates in the Department of Recreation and Leisure Studies may select any one of three emphases: Community Recreation Education; Therapeutic Recreation for work with the retarded, the handicapped, and the aging; or Outdoor Recreation/Education and Conservation.

Special Requirements

Students are scheduled for their one-week resident camp experience at the end of the freshman year at the Warren Center in Ashl nd, approximately 25 miles west of the Boston Campus. The student cost for this experience is approximately \$90.

During the winter quarter of the junior or senior year, a week is scheduled for ski and winter sports instruction as an elective. The student cost is approximately \$90-\$100.

There is no required uniform for Recreation and Leisure Studies students in activity courses.

Sample Freshman-Year Program of Studies in Recreation and Leisure Studies

First Quarter

English
Speech Fundamentals
Social Science
Life Career Planning
Recreation Skills

Second Quarter

Basic Biology
English
Social Science
Recreation Skills

Third Quarter

Basic Biology
Health Education
Social Science
Recreation Skills

Third Quarter A

Outdoor Education and
Camp Leadership

In addition to the above courses a student may elect to take Basic ROTC.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
Biology	8	Earth Science electives	8
English	8	Workshop Drama	4
Social Science	12		
Speech Fundamentals	3		
Health Education	3		
Human Development	8		

II. Professional Requirements and Professional Electives

Course	Q.H.	Course	Q.H.
Budgeting Systems in Recreation	3	*Recreation Skills	19
*Supervised Fieldwork	16	*Life Career Planning	4
*Introduction to Research	4	*Camp Leadership	2
Camp Administration	3	*Anatomy and Physiology	8
Programming for Special Populations	3	Outdoor Education	3
Philosophy of Recreation	3	Introduction to Therapeutic Recreation	3
*Research Seminar	4	Outdoor Education II	3
Outdoor Education for the Handicapped	3	*Survey of Outdoor Facilities	3
School Camping	3	*Group Dynamics	3
Workshop Design	3	Methods and Materials	3
Recreation and the Community Schools Concept	3	Administration of Recreation and Parks	4
Psychological Aspects of Disabilities	4	Int. to Community Recreation	4
Analysis of Movement as Applied to Recreation	4	Int. to Outdoor Education	3
<i>Others-See catalog listings</i>	—		

* Professional requirements

College of Business Administration

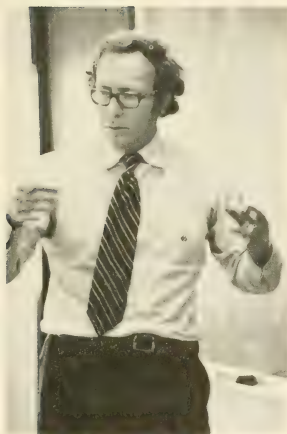
Philip R. McDonald, D.B.A., *Professor and Acting Dean*

Richard J. Santos, M.S., *Associate Dean and Director, Center for Management Development*

Thomas E. Moore, Ph.D., *Assistant Dean and Director, Graduate School of Business Administration*

Dennis R. Ramsier, M.B.A. *Assistant Dean, Undergraduate Program*

Barbara W. Reitz, M.B.A., *Assistant Dean, Administrative Operations*



Accounting Group

Professors

Joseph R. Curran, Ph.D.

Joseph M. Golemme, M.A.,

C.P.A., Harold A. Mock

Professor of Accounting

Russell W. Olive, D.B.A., P.E.

Associate Professors

Robert J. Hehre, D.B.A.

Faculty Coordinator

Paul A. Janell, Ph.D.

Richard Lindhe, Ph.D.

E. James Meddaugh, Ph.D.

Daniel C. Scioletti, J.D.

Assistant Professors

Richard L. Keith, Ph.D. Candidate

Michael R. Lane, Ph.D. Candidate

Denis M. Lee, Ph.D. Candidate

Barbara B. Vidulich,

D.B.A. Candidate

Lecturers

Robert H. Gregory, Ph.D., C.P.A.

Lawrence H. Malchman, Ed.M.,

C.P.A.

Derinda P. Wines, M.S.

Finance and Insurance Group

Professors

Wesley M. Marple, Jr., D.B.A.,

Faculty Coordinator

Elliott L. Atamian, D.B.A.

Edward R. Willett, Ph.D.

Associate Professors

Lal C. Chugh, Ph.D.

Timothy G. Sullivan, Ph.D.

Jonathan B. Welch, Ph.D.

Issa E. Samii, M.B.A. (Visiting)

Assistant Professors

John K. Ford, D.B.A.

Carolyn V. Kent, Ph.D.

Donald M. Pattillo, Ph.D.

General Management Group

Professors

Geoffrey P. E. Clarkson, Ph.D.

Daniel J. McCarthy, D.B.A.,

Faculty Coordinator

Carlo E. Gubellini, M.B.A.

Lyman A. Keith, M.B.A.

Robert C. Lieb, D.B.A.

Associate Professors

John Diefenbach, D.B.A.

Angelo J. Fiumara, J.D.

Raymond M. Kinnunen, D.B.A.

Jeanne M. Lynch, D.B.A. Candidate

John A. Seeger, D.B.A.

Assistant Professors

Ellen F. Curtis, D.B.A.

Tamara A. Gilman, D.B.A.

Candidate

Lecturers

James F. Molloy, M.B.A.

Human Resources Group

Professors

Richard B. Higgins, Ph.D.,

Faculty Coordinator

Jeffrey A. Timmons, D.B.A.

Associate Professors

Matthew D. Arnett, Ph.D.

Herbert G. Graetz, D.B.A.

Christine L. Hobart, D.B.A.

Andre P. Priem, M.A.

Edward G. Wertheim, Ph.D.

Assistant Professors

David P. Boyd, D.Phil.

Henry M. Frechette, Ph.D.

Candidate

Timm L. Kainen, Ph.D. Candidate

Paulette A. McCarty, Ph.D.

Candidate

Edward F. McDonough, III, Ph.D.

Candidate

Francis C. Spital, Ph.D.

Management Science Group

Associate Professors

Robert A. Parsons, Ph.D.
 Candidate, Faculty Coordinator
 Warren G. Briggs, Ph.D. (Adjunct)
 Victor B. Godin, D.B.A., P.E.
 Carl W. Nelson, Ph.D.
 Ashok Rao, Ph.D.

Assistant Professors

T. A. Elkins, Ph.D. Candidate
 Steven E. Eriksen, Ph.D.
 Stavros S. Frantzis, Ph.D.
 William L. Huth, Ph.D.
 John F. King, Ph.D. Candidate
 Paul M. Morris, Ph.D. Candidate
 Nicholas C. Teebagay, Ph.D.
 Candidate
 Mustafa R. Yilmaz, Ph.D.

Marketing Group

Professors

Philip R. McDonald, D.B.A., Faculty
 Coordinator
 Charles J. Collazzo, Jr., Ph.D.
 Robert J. Minichiello, D.B.A.
 Frederick Wiseman, Ph.D.

Associate Professors

Dan T. Dunn, Jr., D.B.A.
 Ian D. Fenwick, Ph.D. (Visiting)
 Gerald Sussman, Ph.D.
 Robert F. Young, D.B.A. Candidate

Assistant Professors

Patrick H. McCaskey, Ph.D.
 Candidate

Lecturers

Hyman Dushman, M.B.A.

Professional Preparation

The College of Business Administration offers concentrations in the principal fields of business: Accounting, Entrepreneurship and New Venture Management (Small Business Management), Finance and Insurance, Human Resources, International Business, Management, Marketing, and Transportation and Physical Distribution Management. There is also a General Business concentration for those students who wish to design their own concentrations.

These programs are geared for men and women seeking to prepare themselves for administrative responsibility in business, government, and other organizations. Their goal is to develop the ability to recognize and solve problems and to understand the role of the business firm in the community, nation, and the world.

In developing these skills, the student gains a broad understanding of business and organizational problems through specialized courses, as well as first-hand knowledge of effective solutions. From 40 to 60 percent of the course work in the College of Business Administration concentrations is centered in the arts and sciences to ensure a liberal education.

All concentrations are offered on the five-year Cooperative Plan, providing most students with substantial practical experience, usually in the fields for which they are preparing.

Aims In keeping with the current trends in collegiate education, the educational aims of the College are:

1. To develop attitudes and ideals that are ethically sound and socially desirable;
2. To cultivate an appreciation of the social, political, and economic developments to which the business firm must adapt;
3. To develop the habits of accurate thinking that are essential to sound judgment and the habits of accurate expression that are essential to effective communication;
4. To provide an opportunity for students to develop a specialization in business in accordance with their interests and talents.

A View of the Five-Year Program The upper-class program of study com-

combines the practice of modern business management and administration with elective courses in liberal arts and other nonbusiness areas.

A concentration in Accounting is for those students preparing for careers in professional public accounting and looking to CPA examination requirements, as well as for those seeking positions in private industry or governmental service. The concentrations in Entrepreneurship and New Venture Management, Finance and Insurance, Human Resources Management, International Business, Management, Marketing, or Transportation and Physical Distribution Management, when combined with the experiences gained in both business and nonbusiness organizations on cooperative work assignments, will give students educational and practical exposure to the requirements of various administrative positions for which their interests and abilities qualify them.

The business training and experiences during cooperative work periods will be some important factors in helping students determine the specific type of work and kind of organization with which they would like to be associated after graduation.

Graduates of the College of Business Administration may see fit to continue their formal education on the graduate level. Such advanced study extends their professional and research abilities so that they may better serve employers in business and industry. It may also prepare them for a career in college-level teaching.

If their plan is to continue their formal education by enrolling in a law school after graduation, they will find that the undergraduate program in the College of Business Administration provides an excellent foundation. Many careers in law are directly involved in the business world, either in large corporations or in private practice. The College's curriculum offers the opportunity to develop a broad understanding of the business environment, as well as the specific skills in the problems of operating a business in today's social and legal environment.

While the Association of American Law Schools does not recommend particular courses or curricula for prelegal students, it does advise that undergraduates build skills in comprehension and oral expression and develop critical understanding of the institutions and values with which the law deals.

The flexibility and liberal arts content of the College of Business Administration curriculum allow a student to fulfill these requirements and, at the same time, to acquire a specialized skill in and knowledge of the field of business management.

The College uses the problem solving and the case methods of instruction in addition to the lecture and recitation system. For the most part, introductory and basic tool courses are presented on a lecture-problem basis. A large portion of the classwork of the upper-class years consists of discussion, analysis, and reports on specific business problems and cases. Students are encouraged to analyze propositions, to challenge unsupported assertions, to think independently, and to support their thinking with logic and facts. Frequent verbal presentations and written reports are required. To facilitate the case method of instruction, there are special classrooms designed for the College.

Graduation Requirements

Students may qualify for the degree of Bachelor of Science in Business Administration in one of the following areas of concentration: Accounting, Entrepreneurship and New Venture Management, Finance and Insurance, Human Resources Management, International Business, Management, Marketing, Transportation and Physical Distribution Management, or General Business.

Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify. This presently

totals 176 quarter hours of credit. The degree conferred not only represents the formal completion of the subjects in the selected courses of study, but also indicates professional study in the designated area of concentration. An overall average grade of C is required for graduation.

A student must be enrolled in a full program of studies at Northeastern University during the final three quarters immediately preceding graduation.

Graduation with Honors Candidates who have achieved superior grades in their academic work will be graduated with honor. Upon special vote of the faculty, a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least six quarters before they can become eligible for honors at graduation.

Accreditation

The Undergraduate Program of the College of Business Administration is fully accredited by the American Assembly of Collegiate Schools of Business, indicating that the program meets the accrediting agency's standards for faculty and student quality, curriculum design, and overall University support.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the concentration areas.

Sample Freshman-Year Program of Studies in the College of Business Administration

First Quarter

Introduction to Business
Math I
Liberal Arts Elective
Economics I

Third Quarter

Accounting II
English II
Liberal Arts Elective
Economics II

Second Quarter

Accounting I
Quantitative Methods in Business
English I
Liberal Arts Elective

Students who will complete the Reserve Officer Training Course are permitted to drop one elective each quarter of their senior year.

The College of Business Administration has no physical education requirement. Students wishing to take courses in physical education may take a maximum of eight quarter hours as elective credits.

Basic Course Requirements

I. General Requirements

Course	QH	Course	QH
*Math I	4	†Introduction to Marketing	4
*Quantitative Methods in Business	4	*Quantitative Methods I & II	8
*English I & II	8	Organizational Behavior I & II	8
*Introduction to Business	4	Business and Society	4
*Accounting I & II	8	Business Policy	4
*Economics MACRO	4	/Nonbusiness Electives	48
*Economics MICRO	4		
Introduction to Finance	4		

**Courses are usually taken in the Freshman year.*

†Course is usually taken in the Sophomore year.

/For International Business majors: 40 Q.H.

Accounting Concentration

Professional Preparation

Aims If you are anticipating a career in accounting, your interests probably lie within one of its two major areas: industrial accounting and public accounting. To enable you to obtain some of the professional background necessary to enter these fields, the College of Business Administration offers a variety of financial accounting and managerial accounting courses.

Preparation for a career in accounting encompasses a broad range of activities. These include all phases of record keeping, internal and external reporting, financial planning, cost control, the design and installation of systems and procedures, the application of electronic and other modern business methods to these activities, and managerial decision making.

Accounting is a fast-growing and critical area of business. It is an exacting field which requires men and women who enjoy dealing with facts and figures as well as with people. It requires accuracy and an ability to reason and to interpret business data.

A View of the Five-Year Concentration During your first year, you will have the opportunity to develop communicative and analytical abilities, to gain an understanding of the nature of accounting, and to survey business as a dynamic institution in an economic setting. Another important activity will be consultation with your coordinator from the Department of Cooperative Education about future work assignments.

Subjects in your third year will include courses in the various functional areas of business (marketing, finance, production, personnel), statistical analyses, and economic activity.

Whether your choice of employment is in the industrial accounting or public accounting area, you will study specialized courses in the third and subsequent years in order to equip yourself for your choice. Subjects will include cost accounting, accounting theory, planning and control, auditing, and taxes.

The sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the concentration areas. In addition to these common requirements, the following accounting core courses are required of students who concentrate in accounting:

Course	Q.H.
Intermediate Accounting I, II & III	12
Cost Accounting I & II	8
Accounting Theory and Practice or Accounting Planning and Control	4
Introduction to Data Processing	4
Business Elective (non- accounting)	4
Open Electives	20
Open Electives (non- accounting)	12



Entrepreneurship and New Venture Management Concentration

Professional Preparation

Aims The concentration in Entrepreneurship and New Venture Management (Small Business Management) provides students who plan to operate their own businesses an opportunity to develop skills necessary for the effective management of small enterprises.

Description of Concentration Have you ever thought about starting, acquiring, and operating your own small business? Will you be faced with an opportunity to join a family business upon graduation? Have your views of or experience with large corporations made you think about life in a smaller organization? Or do you think you would get a real kick out of working for a small company and want to learn more about opportunities with smaller firms?

Are you considering a career in sales management, banking, public accounting, management consulting, or other areas which may involve you directly with owners and managers of new and small companies? For example, a bank loan officer, sales manager, or CPA would often have many entrepreneurs and small-company officers as clients.

If your answer was yes to any of these questions, then you are probably a member of a unique and growing portion of Northeastern students and young people everywhere whose career definition of "doing your own thing" encompasses self-employment or work in a smaller company or other organization.

A concentration in this field will provide you with a thorough "start-to-finish" perspective. The concentration provides courses which deal with each of these key questions:

1. What are the characteristics of people who start their own companies, and what does it take to start and build a new business?
2. What are some key sources of business opportunities, and how does one assess feasibility of a particular venture?
3. What sources exist for raising seed capital, and how does one acquire it?
4. What are the critical problems and opportunities in managing successfully a smaller company, and what managerial methods are appropriate to deal with these?
5. What are the key issues in financing and managing an ongoing, growing venture, and how can these be applied to small ventures?

A View of the Five-Year Concentration Courses in this concentration benefit students in several ways. They will offer the opportunity to develop an ability to assess personal aptitude and potential for small business, to find and evaluate business opportunities, to secure adequate funding, and to organize and manage the various facets of the small business—marketing, finance, control, and personnel.

Entrepreneurship and New Venture Management presents students with the opportunity to prepare for a career in which they can be involved in the management of business while maintaining a significant degree of autonomy and independence.

Some students will enter this career at graduation or sometimes even before. However, many find that they first obtain experience through their cooperative work and postgraduate employment prior to establishing their own enterprises.



The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the concentration areas. See page 52.



II. Professional Requirements

Course	Q.H.	Course	Q.H.
New Venture Creation	4	Business Elective	4
Opportunity Analysis & Venture Capital	4	Open Electives	32
Small Business Finance	4		
Management of Smaller Enterprises	4		
Small Business Institute Field Project	8		

Finance and Insurance Concentration

Professional Preparation

Aims The objective of the Finance and Insurance Concentration is to train students for the financial management of businesses, nonprofit organizations, and governmental units. Preparation is two-fold: students receive *information* about current practices, theories, and concepts of financial management and gain *experience* in analyzing situations that require financial decisions.

Description of Concentration Almost every phase of economic activity involves aspects of financial management—of cash or other funds, and of economic resources available to the individual, the business, or other economic unit.

Perhaps you can visualize your future career in one of the many areas of funds management: security analysis, estate planning, corporate finance and control, financial planning, security or insurance brokerage, underwriting, credit management, and banking. If so, you should consider the Finance and Insurance Concentration.

There are also career possibilities in specific financial institutions which perform indispensable services for present-day business and industry. Among them are banks, insurance companies, investment houses, credit concerns, financial service institutions, mortgage companies, and national and local real estate brokerage firms and appraisers.

Career openings can be sought in all areas of business, industry, and government, where financial planning and operation are vital.

A View of the Five-Year Concentration As a middler, you study Introduction to Finance and beginning courses in other business fields. Specialization occurs in your upper-class years as you take advanced courses in insurance, investments, security markets, and basic business finance. To provide you with a well-rounded education, other courses are available, particularly in the broad area of economics.

Following the introductory course, your courses are Managerial Finance, Investment Management, and Money and Business Activity. In addition to these required courses, many electives are available. Examples of these electives are: Advanced Managerial Finance, Financial Analysis, Management of Financial Institutions, and Insurance. Independent Study is often an appropriate elective.

All courses which the Department of Finance and Insurance offers are open to students in any concentration who have taken the prerequisite subjects. Instructors may waive prerequisite courses in special circumstances. However, not all courses are offered every year because of staffing constraints.

A. Managerial Finance, subfield

There are two objectives of the finance function in the contemporary corporation or business entity:

1. To provide needed funds on terms that are the most favorable in view of current planning;
2. To regulate the flow of funds so as to maximize the realization of objectives.

The key concerns of financial management are the capital structure of the business and the optimal manner in which its assets should be held. With only minor differences, these same broad objectives apply to the finance function of nonprofit organizations, including those in the public sector (units of government).

B. Management of Financial Institutions, subfield

The area of specialization is broadly based within the subject area and is applicable to a variety of financial institutions and positions within them.

The three major topical considerations of the area of specialization are:

1. The institutional structure of the financial system and the relationship between it and the surplus and deficit units of the whole economy;
2. Asset, liability, and capital management problems of financial intermediaries;
3. Investment analysis and portfolio management policies appropriate to different financial intermediaries.

C. Investment and Management Analysis, subfield

There are two benefits of studying this concentration. First, the general understanding which students gain will help them manage their own affairs. Second, it will assist those seeking professional careers in organizations where the investment function is paramount: industrial and utility corporations, real estate developments, financial institutions, and many governmental agencies.

The specialized skills and principles which students develop in the concentration should benefit them if they seek careers as investment managers or security analysts in the following organizations:

1. Stock exchanges, investment advisory firms, brokers-dealers, underwriters, mutual funds, and other investment companies which are a part of the securities markets;
2. Insurance companies, commercial banks, savings and loan associations, trust companies, mutual savings associations, pension funds, and organizations involved in the activities of the securities markets; or

3. Federal and state governmental agencies such as the SEC, FDIC, Treasury Department, IRS, and others having regulatory responsibilities regarding the securities markets and their participants.

D. Insurance and Risk Management, subfield

The insurance concentration is divided principally between the insurance needs of individuals and businesses covering a wide variety of risks. The basic elements are designed to reduce existing risks and to establish frameworks within which future risks and uncertainties can be analyzed and managed.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the concentration areas. See page 52.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Managerial Finance	4	Finance Electives	12
Money and Business Activity	4	Business Elective	4
Investment Management	4	Open Electives	32



Human Resources Management Concentration

Professional Preparation

Aims Human resources management, which focuses on the effective utilization of people at work, is an extension of personnel and labor relations but includes more than the traditional areas of recruitment, selection, compensation, and training. A human resources manager must also be knowledgeable about manpower planning, equal employment opportunity laws and affirmative action procedure, organizational development, career planning, job design and motivation, leadership, and communications. The ultimate goal is to provide an organization with the people who will be most effective in their jobs.

Description of Concentration In recent years there has been a growing interest in the quality of the employee's work life and the efficient production of goods and services. Companies such as Procter and Gamble, AT&T, General Motors, and Burlington Mills, as well as a growing number of organizations in the public sector, are paying more and more attention to the quality of human performance at work and the level of human contributions to output. At a time when financial resources and investment capital are becoming scarcer, many organizations are beginning to take a closer look at the management of their people as their most precious resource. In recognition of the growing interest in this field during recent years, Northeastern University's College of Business Administration offers an undergraduate concentration in Human Resources Management.

The effective management of human resources calls for a joint partnership between organizational specialists such as personnel administrators, labor relations negotiators, wage and salary analysts, and operating line managers in the various functional areas (marketing, finance, production) of the company. As the traditional role of personnel administration is expanded to include affirmative action programs, job enrichment, and organizational development activities, career opportunities in the fields of labor relations and personnel administration are likely to excite increasing student interest for both the public and private sectors.

For the student whose career aspirations lie in fields other than personnel and labor relations, one important point should be made: human resources management is not a specialized activity confined to the personnel department. Whether you start your career as a work-flow analyst in manufacturing, a customer service assistant in marketing, as a field auditor in the accounting department, or a hospital unit manager, you will be required to demonstrate skills in working with individuals and groups to achieve desired results.

A View of the Five-Year Concentration Human resources management is practiced not only by specialists in the area of personnel and labor relations, but also by line managers and specialists in many other business areas. The Human Resources Management Concentration is structured to expose students to all major functions of Personnel Administration and Labor Relations.

II. Professional Requirements

Course	Q.H.
People and Productivity	4
Personnel Administration	4
Contemporary Labor Issues	4
Reward System	4
Human Resources Management Electives	12
Business Elective	4
Open Electives	32

International Business Concentration

Professional Preparation

Aims In recent years, several factors have contributed to a rapidly increasing need for qualified people in the field of international business. The growth of multinational firms, international trade, and regional international trading blocs has created a shortage of skilled managers who are equipped to analyze the complexities of international business problems.

The International Business Administration Concentration offers students the opportunity to prepare themselves to meet these management needs. It offers the opportunity to develop an understanding of problems involved in operating business enterprises across national boundaries and to gain an ability to analyze the operations of businesses in multinational environments.

The curriculum consists of the following:

1. A broad education provided by liberal arts course requirements.
2. A basic business education provided by business administration core requirements.
3. A specialized education in International Business.

Description of Concentration The International Business Concentration consists of six courses. Two of them are required: Introduction to International Business, and Seminar in International Business. There are also four electives: two from the International Business curriculum and two from the Liberal Arts International List (See page 60.)

When you enroll in the International Business Concentration, you will find that its structure is most flexible, permitting you to have a dual concentration. For example, you may concentrate in International Business and use open electives to fulfill the requirement of a second concentration. The dual concentration has advantages for those employment opportunities in traditional functional areas (e.g., production, marketing, finance) which, nevertheless, take place in an international setting. All College of Business Administration courses which are offered as part of the International Business Administration Concentration are available to students in other concentrations during their middler, junior, and senior years.

A View of the Five-Year Concentration Careers in international business are best pursued in companies which carry on trade or manufacturing operations in foreign countries. An increasing number of multinational firms require that candidates for their top management positions have prior experience in international operations. In addition, large banks and insurance companies want their managers to understand international business. Other types of organizations—government, trade associations, large unions—require international business knowledge. The opportunity for foreign travel in any of these capacities is frequently available.

Students who choose this concentration have the opportunity to gain an understanding of the economic, political, and social constraints on international business. They also have the opportunity to develop skills in analyzing the financial, marketing, and operational strategies of the multinational firm.

Liberal arts electives such as modern languages, political science, international economics, geography, and cultural anthropology—all appropriate to the



understanding of international relations—are highly recommended to complement this concentration.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the concentration areas. See page 52.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Introduction to International Business	4	Business Electives	12
Seminar in International Business	4	Open Electives	32
Business Administration Electives (International List)	8		
Liberal Arts Electives (International List)	8		

International Business Administration Electives

College of Business Administration Electives

Comparative International Management
International Financial Management
International Marketing
International Transportation and Distribution Management

Liberal Arts Electives

Language and Culture
Individual and Culture
Evolution and Society
Culture in Transition
Economic Anthropology
Culture and Change
Social Change
Comparative Government
World Politics
International Relations
International Organization
International Law
Comparative Economics
Economic Development
International Economics

Management Concentration

Professional Preparation

Aims Do your career interests lie in the broad area of administration rather than in specialized fields? The Management Concentration offers you the opportunity to prepare yourself for a wide variety of administrative careers in business, government, and nonprofit institutions.

Description of Concentration As a Management student you must have a basic understanding of all organization functions: accounting, marketing, finance, and production. Your courses in these areas give you an overview of them, showing their interrelationships and the ways they can be used as management tools. For example, you study accounting as a help in the decision-making process, not as a specialty itself.

A similar approach is taken to courses in other areas. Since management is the process of getting things done through people, your professors pay significant attention to "people problems" to stress the importance of developing an effective work force.

The courses in the Management Concentration vary considerably in content and method of instruction because they vary in their objectives. In most of them, students are heavily involved in the conduct of classes and are required to work on group assignments. The purpose of this participatory approach is to prepare you for the demands of management in the business community.

A View of the Five-Year Concentration The curriculum and teaching methods center around the development of basic skills and knowledge appropriate to administration, rather than upon specialized functional techniques. Although the case method of study is extensively used, a variety of teaching methods consistent with particular course objectives is employed. The basic objectives of the concentration are: to confront the student with appropriate learning experiences, to increase skills and knowledge in basic disciplines underlying administrative practice, and to develop judgment and skills in problem analysis and decision-making in organizations.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the concentration areas. See page 52.



II. Professional Requirements

Course	Q.H.	Course	Q.H.
Cost Accounting for Management	4	Production Management	4
Introduction to Data Processing	4	Business Electives	8
People & Productivity	4	Open Electives	32
Legal Aspects of Business	4		

Marketing Concentration

Professional Preparation

Aims A business organization not only designs and manufactures products, but also markets and sells them to manufacturers, wholesalers, retailers, and consumers. This is what a concentration in marketing is all about.

Description of Concentration All the business activities that direct the flow of goods and services from producer to consumer are classified as marketing. The marketing process begins by determining the needs and wants of customers. Once these wants and needs are established, the organization's first objective is to produce goods or service to satisfy a particular consumer. Essential in all types of business are such activities as product design, research, pricing, packaging, transportation, advertising, selling, and servicing. The overall responsibility for these functions rests with the marketing manager.

The Marketing Concentration offers a wide variety of courses, taught by lecture and class discussion. They range from International Marketing and Consumer Behavior to Competitive Strategy and Marketing Research. Case materials are analyzed, and written reports are required.

A View of the Five-Year Concentration Outside the classroom, students may attend weekly meetings of the Advertising Club and of the American Marketing Association Student Chapter. Here they further their interests by discussing issues with leaders in the field.

Without successful marketing and advertising, industrial products remain unsold. More and more companies are finding that today's tempo of progress and high levels of production require up-to-date marketing techniques to generate a higher sales volume.

As a member of the management policy group, the marketing executive takes a broad view of all aspects of business management and policy. They also serve effectively as trained specialists in their own area.

Success in the market is vital to every company, whatever its size. Therefore, the need for adaptable and informed marketing management exists in all types of business and industry.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas. See page 52.



II. Professional Requirements

Course	Q.H.	Course	Q.H.
Marketing Management	4	Business Elective	4
Marketing Research	4	Open Electives	32
Competitive Strategy	4		
Marketing Electives	12		

Transportation and Physical Distribution Management Concentration

Professional Preparation

Aims Transportation is an integral part of national and international distribution systems. It is a determining factor in the availability and prices of goods and services in our economy.

In corporate distribution, transportation specialists operate within a complex organizational framework in which goods are stored and moved. Effective management of this distribution process involves understanding of inventory control, warehousing, transportation options, and the interaction of these activities with other functional operations.

Growing concern with the economic and service conditions of the transportation industry has also created career positions with government agencies which are engaged in transportation policy development and administration. Other career possibilities are to be sought with carriers, such as airlines, railroads, and trucking companies, which actively seek people who are familiar with the operational and regulatory aspects of their business.

The Transportation and Physical Distribution Management concentration offers students opportunities to prepare for these diverse career opportunities.

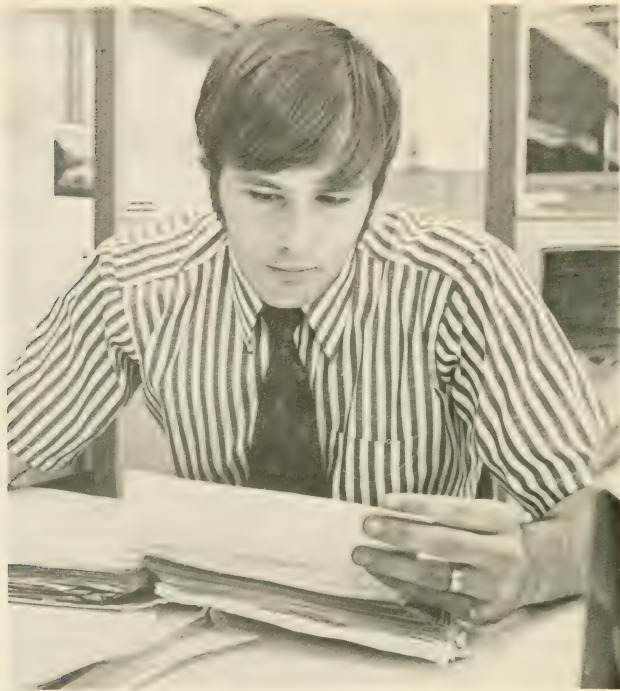
Description of Concentration The concentration attempts to provide the student with a balanced background in Transportation and Physical Distribution Management. Courses consider not only the viewpoint of the corporate shipper and carriers, but also those of public officials and consumer interests. Courses have a strong contemporary orientation and promote frequent interaction with practitioners from business and government.

A View of the Five-Year Concentration Course offerings in Transportation and Physical Distribution Management are sequenced so that students who desire only an introductory exposure may take one or several courses as part of a broader business background. An undergraduate concentration in the area consists of six courses. Four are required courses with the balance of the concentration composed of electives.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the concentration areas. See page 52.

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Principles of Transportation	4	Transportation Electives	8
Physical Distribution Management	4	Business Elective	4
Current Issues in Transportation Policy	4	Open Electives	32
Seminar in Transportation	4		



General Business Concentration

Professional Preparation

Aims Because innovation and relevance are key words in the College of Business Administration, the General Business curriculum is adaptable to each student's needs. Meeting with an academic adviser, you tailor your academic program to meet your own career goals.

Description of Concentration Students will be required to select a total of at least seven business electives beyond the Basic Course Requirements.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the concentration areas. See page 52.

II. Professional Requirements

Course	Q.H.
Business Electives	28
Open Electives	32

College of Criminal Justice

Norman Rosenblatt, Ph.D., *Dean*

Robert D. Croatti, *Assistant Dean*

James R. Reed, *Assistant Dean*

Robert E. Fuller, *Assistant to the Dean*

Lester W. McCullough, Jr., *Assistant to the Dean*

Professors

Frederick Cunliffe, Ph.D.

Edith E. Flynn, Ph.D.

Robert R. J. Gallati, D. Jur., L.L.M.,
S.J.D.

Joseph Senna, M.S.W., D. Jur.

Robert Sheehan, M.A., D.Jur.

Assistant Professors

James A. Fox, Ph.D.

Nicholas Hahn, Ph.D.

Spencer A. Rathus, Ph.D.

Frank Schubert, D.Jur.

Wallace Sherwood, D.Jur., L.L.M.

Associate Professors

Romine R. Deming, Ph.D.

Larry Siegel, Ph.D.

Professional Preparation

Aims Established in 1966 under a grant from the Ford Foundation, the College of Criminal Justice offers young men and women the opportunity to prepare for professional careers in Criminal Justice. The curriculum has been designed primarily for students interested in careers in the areas of criminal justice services. Law enforcement, private security, corrections, and rehabilitation are some of the careers students can pursue. It is also expected that a number of graduates will choose advanced study in academic fields including criminology, forensic science, social work, public administration, and law, as well as in the entire area of Criminal Justice.

This College was formed to meet a significant social problem of our times. Innovative methods and ideas, as well as basic information, are needed by those involved in community and social services to cope with the growing problems of our society. As part of its educational role, the College has received substantial grants from the Department of Justice and was designated as a center of education and innovation in the field of Criminal Justice and forensic science, as well as a Training Center in Criminal Justice.

A View of the Five-Year Program The College of Criminal Justice offers a five-year academic program on the Cooperative Plan of education which allows a candidate for the baccalaureate degree to undertake a specialized program of study. It is anticipated that "co-op" assignments will include work in police departments, juvenile and adult correctional institutions, and probation, parole, and social agencies.

The student will receive a broad educational background for his or her future role in criminal justice. Course work in the social sciences, behavioral sciences, and the humanities will be integrated with professional courses since the student will be preparing himself or herself for a career involving the social problems of people from all walks of life. The liberal content of the curriculum is not only highly desirable for its value as a foundation upon which general intellectual development may be based, but also as an indispensable educational requirement for professional service in the field of special interest.

Graduates must be prepared to judge objectively the many socio-economic problems inherent in the administration of justice in contemporary American

society. The College of Criminal Justice will help prepare its students for a career which will be not only personally productive and rewarding but intellectually stimulating as well.

Graduation Requirements

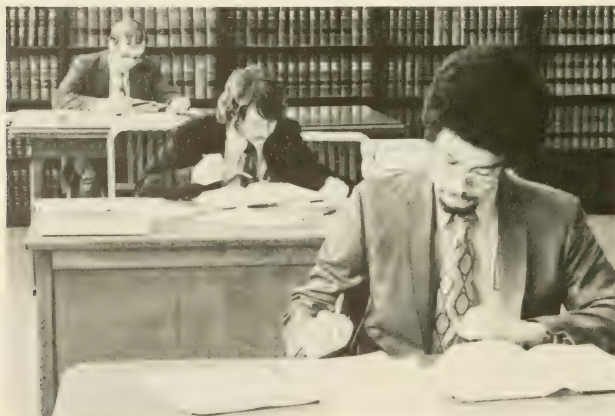
Candidates for the Bachelor of Science degree must complete all the prescribed work of the curriculum, which totals 172 quarter-hours credit.

Students who undertake the Cooperative Education Program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive a degree until at least one year of academic work immediately preceding graduation has been completed at Northeastern.

Graduation with Honor

Candidates who have achieved superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a limited number of this group may be graduated with high honors or with highest honors. Students must have been in attendance at the University for at least three years before they become eligible for honors at graduation.



Sample Freshman-Year Program of Studies in the College of Criminal Justice

First Quarter

English
Economics
Introduction to Sociology and
Anthropology
Hist. of Criminal Justice I

Third Quarter

Economics
Found. of Psychology
Introduction to American
Government
Adm. of Criminal Justice

Second Quarter

English
Found. of Psychology
Introduction to Politics
Hist. of Criminal Justice II

In addition to the above courses, a student may elect to take Basic ROTC.



Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
*Principles and Problems of Economics	8	*Introduction to Literature	4
*Introduction to Politics	4	†State and Local Government Science	4
Introduction to American Government	4	or Math	8
*Foundations of Psychology I & II	8	Non-CJ Electives (14)	56
*Introduction to Sociology and Anthropology	4		
*Freshman Writing	4		

II. Professional Requirements

Course	Q.H.	Course	Q.H.
*Administration of Criminal Justice	4	Constitutional Problems I: The Police and the Criminal Suspect	4
*Topics in History of Criminal Justice	8	Criminal Justice Electives (9)	36
Criminology	4	Statistics	4
Criminal Law	4	Research Methods	4

*Courses are usually taken in the freshman year.

†Course is usually taken in the sophomore year.

College of Education

Arthur D. Smith, Ph.D., *Acting Dean*

Charles F. Haley, Ed.M., *Associate Dean*

Janice Walker, A.B., *Assistant Dean of Graduate School*

***Educational**

Administration

Department

Albert Kovner, Ed.D.,
*Associate Professor and
Chairperson*

Professor

Joseph E. Barbeau, Ed.D.
Frank E. Marsh, Jr., Ed.D.

Associate Professors

Robert S. Butters, Ed.D.
Arthur Davis, Jr., Ed.D.
Thomas F. Henstock, Ed.D.

Assistant Professor

Carlton B. Lehmkuhl, Ph.D.

***Counselor Education**

Department

Barbara A. Okun, Ph.D.
*Associate Professor and
Chairperson*

Professor

Thomas F. Harrington, Ph.D.

Associate Professors

Irwin Doress, Ed.D.
Wilbert J. McClure, Ph.D.
William G. Quill, Ed.D.
Robert W. Read, Ed.D.
James F. Scorzelli, Ph.D.

Assistant Professors

Dorothy Bickling, Ed.D.
Phyllis R. Bowman, Ed.D.
Louis J. Rappaport, Ph.D.
Salvatore J. Rizzo, Ph.D.

Curriculum and

Instruction

Department

Russell J. Call, Ed.D.
*Associate Professor and
Chairperson*

Professors

Melvin E. Howards, Ph.D.
Maurice Kaufman, Ph.D.
Paul H. Tedesco, Ph.D.

Associate Professors

Nicholas J. Buffone, Ph.D.
Leslie A. Burg, Ed.D.
Mary J. Lee, Ed.M.
Robert C. McClean, Jr., Ed.D.
Harold A. Miner, Ed.D.
Sandra M. Parker, Ed.D.

Assistant Professors

Thomas H. Clark, M.A.
Blanche Korngold, Ed.M.,
C.A.S.
Carlton B. Lehmkuhl, Ph.D.
John F. Maguire, Ed.M.

Foundations of

Education

Department

John D. Herzog, Ph.D.
Professor and Chairperson

Professors

E. Lawrence Durham, M.A.
E. Vaughn Gulo, Ed.D.
Mervin D. Lynch, Ph.D.

Associate Professors

Ronald E. Baptiste, Ed.D.
Wendell R. Brown, LL.B., D.S.
Cheryl C. Hanks, Ph.D.
Joseph Meier, Arbitur, Ed.D.
Irene A. Nichols, Ed.D.
Susan E. Rindler, Ph.D.
Barbara A. Schram, Ed.D.
Coordinator of Human
Services Program
Alvin D. Zallinger, M.A.,
Adviser in Human Services
Program

**Rehabilitation and
Special Education
Department**

Matthew H. Luzzi, Ed.D.
Professor and
Chairperson

Professor

George J. Goldin, Ph.D.

Associate Professor

Louise LaFontaine, Ed.D.

Assistant Professors

James L. Lomastro, Ph.D.
Susan E. Massenzio, Ph.D.
Field Work Coordinator
in Human Services Program
JoAnne S. Jameson, Ed.M.
Dorothy A. Weber, Ed.M.

**Speech and Audiology
Department**

Robert J. Ferullo, Ed.D.
Professor and Chairperson

Associate Professor

Arlene T. Greenstein, Ph.D.
Robert Redden, Ed.D.

Assistant Professors

Joseph C. Aurelia, Ph.D.
Clinical Coordinator
Martin Hanopole, M.A.
F. Adele Proctor, Sc.D.
Kristine E. Strand, M.A.

Instructors

Helen Anis,
Clinical Supervisor
Leonard Israel, M.A.
Kathy A. Geronimo, M.S.,
Clinical Supervisor
Gilbert G. Neil, M.S.,
Clinical Supervisor



Aims The College of Education at Northeastern University is committed to the offering of quality instructional programs which attempt to bridge the gap that has existed traditionally between theory and practice. We are a professional college which seeks to prepare practitioners with expertise in the real world of learning, teaching, and managing—practitioners who are sensitive and responsive to the needs of people.

As a result of its urban setting, the College of Education is serious about helping students to understand the urban environment and to find ways to adapt learning settings to human needs. As a college we are striving continually to respond to the special needs of the city, the region, and the profession.

Human Services

This unique major offers students the opportunity to prepare themselves for careers in one of the areas broadly defined as the helping professions. The program is interdisciplinary (see page 129) and includes many aspects of the studies in the College of Arts and Sciences and in other basic colleges of the University, as well as the College of Education. This broad, academic background combined with field experiences permits the development of a solid professional base.

Students may pursue graduate studies in a variety of Human Service disciplines including social service, public administration, paralegal or law, public health, or counseling.

Speech and Hearing

The College of Education offers a preprofessional program in speech and hearing. This program is concerned with the scientific study of the processes of individual human communication, with particular emphasis on speech, language,

and hearing. To achieve a minimal level of clinical competence as a Speech-Language Pathologist or Audiologist, one is required to undertake graduate study at the level of the master's degree which will provide the student with the opportunity to apply for certification by the American Speech and Hearing Association.

Such certification requires the master's degree or its equivalent, which involves a specialized academic training and professional experience that provides an in-depth study of normal communication processes, development and disorders thereof, evaluation procedures, and clinical techniques. The individual must also pass the National Examinations in Speech Pathology or Audiology. Upon completion of the professional and clinical practicum, education students must complete their Clinical Fellowship Year under the supervision of an individual who holds the Certificate of Clinical Competence.

Teacher Preparation

Elementary Education

In the Elementary Education program students have the opportunity to pursue studies in the College of Arts and Sciences and in other basic colleges of the University, as well as the College of Education. This broad, academic background combined with field experiences permits the development of a solid professional base.

Emphases In addition to those courses which are required of all Elementary Education majors, students are expected to choose an area of emphasis from one of the following six: Early Childhood Education, Humanities, Language-Reading, Science-Mathematics, Social Sciences, or Special Education.

Emphases usually consist of 40 quarter hours of courses. Each emphasis has been designed to focus the student's studies but does not lead to certification in that area. In addition, this concentration may serve as a catalyst for further study in a graduate program.

Secondary Education

Those interested in secondary schools may major in one of the following teaching areas:

- Biology
- Chemistry
- Earth Science
- English
- General Science
- Mathematics
- Modern Languages
- Physics
- Social Studies

The objectives of these programs are to: (1) develop a field of knowledge for effective teaching, and (2) prepare students for the pursuit of advanced work in either the subject matter area or the teaching field.

Teacher Certification

Inasmuch as public education is a state responsibility, each state in the United States prescribes the conditions under which persons may be licensed to teach in its public schools. The requirements for obtaining a certificate for teaching, therefore, vary among the different states.

Students who complete the College of Education programs which prepare for teaching at the elementary and secondary levels meet the requirements for certification in the Commonwealth of Massachusetts. Because of agreements

existing between Massachusetts and a number of other states, certification for graduates of the State Approved programs in Elementary Education and secondary-school biology, English, general science, mathematics, and social studies is also readily achieved elsewhere. Each student wishing certification must apply to the State Department of Education, but may obtain assistance in the office of the Dean.

Accreditation

The College is a member of the American Association of Colleges for Teacher Education. The programs in elementary and secondary education offered by the College of Education are accredited by the National Council for Accreditation of Teacher Education through August 1986.

At the undergraduate level, the College of Education's programs in Elementary Education, Biology, English, General Science, Mathematics, and Social Studies are approved under the Interstate Certification Compact (I.C.C.). These constitute the state approved programs. I.C.C. approval assures graduates of certification in Massachusetts and most other states.

Music Education

In the Music Education program, students have the opportunity to prepare as teachers of music from kindergarten to grade twelve.

In all respects, this program is consistent with standards set by the National Council for Accreditation of Teacher Education (NCATE), the National Association of State Directors of Teacher Education, the National Association of Schools of Music, and the Music Educators National Conference.

This program gives students the opportunity to qualify for Massachusetts certification as teachers of music. Those interested in certification must apply directly to the State Department of Education. Members of the Dean's Office are most willing to assist students with the application process.

Cooperative Education

All students in the College of Education are expected to participate in the five-year Cooperative Program. After a full-time freshman year, students alternate periods of classroom study with periods of supervised employment, enabling the student to graduate with valuable work experience in addition to a degree in education.

Opportunities are steadily increasing for selected students to receive assignments in cooperating school systems, social agencies, hospitals, or libraries. In these settings, students may enjoy unique experiences which greatly enhance self-confidence and professional growth.

Graduation Requirements

Degree The College of Education will award the Bachelor of Science in Education Degree to those who successfully complete their program of preparation.

Quantitative Requirements

The requirements will vary, depending upon the program pursued. Most students will need to earn 181 quarter-hours with no program permitting more than 183 quarter hours or less than 176 quarter hours. Specific program details may be obtained in the Office of the Dean of the College of Education.

Qualitative Requirements

Students in the College of Education are expected to maintain a minimum average of C. A minimum of C+ in the field of specialization and professional sequence is expected for recommendation for placement. Students are urged to rectify academic deficiencies at the earliest possible opportunity to prevent

serious academic handicaps. The final three quarters preceding graduation must be completed in residence at Northeastern.

Graduation with Honor

Candidates who have attained superior grades in their academic work will be graduated with honors, high honors, or highest honors. To become eligible for honors at graduation, students must have attended Northeastern for at least six quarters.

Program Requirements

An important concern of faculty and administrators within the College of Education is helping students to get the most out of their college experiences. Faculty specialists and members of the Dean's Office are available to assist students with course selections and to guide them in appropriate study sequences.

All College Requirements

In addition to the completion of Freshman Writing and Introduction to Literature, all College of Education students must complete a minimum of 16 quarter hours (usually four courses) in each of these areas of study: the Humanities, the Social Sciences, and Mathematics/Sciences. Certain required courses may be used in fulfillment of these requirements. There is no language requirement.

Human Services

The five basic aspects of this program are:

I. All-College Requirements

II. Prerequisite Courses

Courses in the areas of economics, human services, political science, psychology, and sociology.

III. Core Courses

Courses in the areas of community studies, counseling, and casework, group process, organizational behavior, rehabilitation, and social welfare.

IV. Focus

A group of four courses focused on a student's area of interest and selected in consultation with an adviser.

V. Supervised Field Experience

During the junior and senior years, students spend 300 hours in a supervised placement in a public or private agency.

Speech and Hearing

The three basic aspects of this program are:

I. All-College Requirements

II. General Background Education

While the broadest possible general educational background for the future clinical practitioner of speech-language pathology and audiology is highly encouraged, the nature of the clinician's professional work suggests the necessity for some emphasis in his general education. For example, elementary courses in psychology and sociology are desirable as are studies in mathematics, general physics, zoology, as well as human anatomy and physiology.

III. Preprofessional Requirements

Required Education in the Basic Communication Processes Area — These courses provide information applicable to the normal development and use of speech, language, and hearing with emphasis upon the normal aspects of human communication. These content areas are: 1. anatomic and physiologic bases for the normal development and use of speech, language, and hearing (e.g., anatomy, neurology, physiology of speech, language, and hearing mechanisms); 2. physical bases and processes of the perception and production of speech and hearing (e.g., acoustics or physics of sound; phonology, physiologic and acoustic phonetics; perceptual processes; and psychoacoustics); 3. linguistics and psycholinguistics.

Required Education in the Major Professional Area — During the junior and senior years, the students will pursue beginning courses in the areas of: 1) understanding speech, hearing, and language disorders, such as various types of disorders of communication, their symptoms, and causes; 2) evaluation skills, such as procedures, techniques, and instrumentation used to assess communication disorders; and 3) management procedures, such as principles in remedial procedures and those utilized in habilitation and rehabilitation for children, youth, and adults with various disorders of communication.

During the senior year, students perform an introductory clinical practice in the public schools, under supervision.

The Northeastern University Hearing Language and Speech Clinic is accredited by the Service Board, American Speech and Hearing Association.

Elementary Education

The three basic aspects of this program are:

I. All-College Requirements

II. General Requirements

Courses in the areas of English, drama/speech, history, political science, economics, and earth science.

III. Professional Requirements

Courses in the foundations of education (these are psychological, humanistic, and sociological-anthropological in orientation), measurement and evaluation,



analysis of teaching and the learning process, methods courses in the teaching of reading and mathematics, as well as general methods courses which cover other fields, such as social studies and science, and student teaching (this is a full-time commitment for one quarter).

Secondary Education

The three basic aspects of this program are:

I. All-College Requirements

II. General Requirements

Courses in the areas of English, history, and drama/speech.

III. Professional Requirements

Courses in the major subject field, the foundations of education (these are psychological, humanistic, and sociological-anthropological in orientation), measurement and evaluation, analysis of teaching and learning process, methods courses in the major subject field, and student teaching (this is a full-time commitment for one quarter).

Music Education

Students who choose to major in Music Education are expected to: (1) achieve a high level of competence on one instrument as demonstrated during a junior-year audition and (2) participate in one or more of the musical organizations of the University with performance judged of suitable quality by the adviser.

There are three basic aspects to this program:

I. All-College Requirements

II. General Requirements

Courses in drama/speech, and history.

III. Professional Requirements

Courses in music, the foundations of education (these are psychological, humanistic, and sociological-anthropological in orientation), measurement and evaluation, analysis of teaching and learning process, and student teaching (this is a full-time commitment for one quarter). Through this curriculum, students have an opportunity to learn to play all basic orchestral instruments (the keyboard, brass, percussion, orchestral string, and woodwind instruments), as well as to teach vocal, instrumental, theoretical, creative, and appreciational aspects of music from kindergarten through grade twelve.



College of Engineering

Thomas E. Hulbert, M.S., *Acting Dean*

David C. Blackman, B.S., *Assistant Dean, Director of Minority Affairs*

Ralph S. Blanchard, M.S., *Assistant Dean*

George W. Hankinson, M.S., *Assistant Dean, Director of Graduate School*

Bradford C. Perry, M.Ed., *Assistant to the Dean, Director of Student Services*

Professional Preparation

The College of Engineering provides the opportunity for students to participate constructively in a technologically changing world, thus contributing to the accumulation and application of new knowledge as professional engineers. Fundamentals are emphasized in order to offer students the opportunity to obtain the basic technical knowledge which is necessary in order to practice in a variety of positions. At the same time, study of the social sciences and humanities provides an opportunity to develop an awareness of the social, economic, political, aesthetic, and philosophical influences that are part of the context in which students will practice their profession.

Aims The concept of education as a continuing, lifelong process necessary for effective work in an environment of constantly new facts, ideas, and scientific principles underlies the whole structure of the engineering curriculum.

Engineering education is directed toward assisting students to:

1. Understand the scientific principles and knowledge of the particular branch of engineering chosen;
2. Comprehend and develop competence in the engineering method and its application;
3. Communicate effectively and succinctly the important results of any technical study both verbally and graphically;
4. Acquire the motivation for continuing professional growth.

Day Cooperative Programs

The College offers five-year cooperative programs in Civil, Mechanical, Electrical, Chemical, and Industrial Engineering leading to the degree of Bachelor of Science with specification according to the engineering department in which the student qualifies. The College also offers a General Engineering Program which leads to the awarding of an unspecified Bachelor of Science degree in which the student has the opportunity to design his curriculum with his career objectives in mind. The Computer Science Program is an option under this unspecified program. The various curricula offer students the opportunity to effectively prepare themselves to seek employment in industry or to continue their education in graduate schools. The College is operated on the Cooperative Plan.

Five-Year BS/MS Programs

Several majors (Electrical, Mechanical, and Engineering Management) offer Programs leading to both the Bachelor's and Master's degrees in five years. Students with outstanding academic records (3.0 or better) begin carrying extra

courses in the third year. In the senior year, students forego one cooperative work quarter and go to school full time to complete the degree requirements for both degrees.

Under the six programs, several options or specialized concentrations are available. They are:

Electrical Engineering—Power Systems Option To meet the needs of the rapidly expanding electric power industry, Northeastern has a special program in Power Systems Engineering. This program is offered on the Cooperative Plan and can result in a bachelor's and master's degree in six years. The subject matter is basically that of electrical engineering augmented by work in power systems analysis, computers in power systems, nuclear plant considerations, power system planning, protection and stability, MHD and DC transmission.

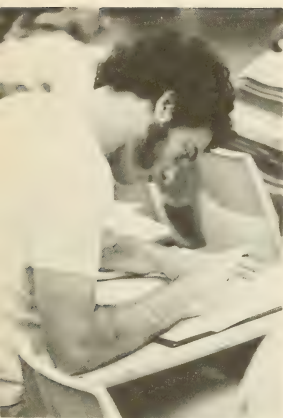
Civil Engineering—Environmental Option This option is designed for engineers intending to work in the field of environmental protection and improvement. Topics included at the undergraduate level are Water Supply, Treatment & Wastewater Disposal, Solid Waste Disposal, and Air Pollution. The cooperative program, resulting in a bachelor's degree in civil engineering in five years, enables one to go immediately into professional practice in government agencies, industry, or private consulting firms, depending on the job market and one's own abilities and industriousness.

Computer Studies The computer, virtually nonexistent thirty years ago, has spawned several of the fastest growing professions in the world. The demands for people educated in the design and use of computers have reached unprecedented levels in recent years. The College of Engineering offers two computer-oriented undergraduate programs of study: 1) a Computer Engineering option in the Department of Electrical Engineering; and 2) a Computer Science option under the General Engineering Program.

Under Electrical Engineering, the Computer Engineering Option is concerned with the design of digital computers and their integration within larger systems for communications, resource management, and automatic control. The computer engineering team for a large computer system development project includes computer architects, software engineers, microprogrammers, logic designers, and electronics engineers. On the other hand, the computer engineer may have sole responsibility for all of these activities during the development of a microprocessor-based instrument or controller. Further details on this program are described in the section devoted to the Department of Electrical Engineering which follows.

Under the General Engineering program, the Computer Science Option is concerned with the instructions or programs or "software" which are needed to make computers perform tasks useful to humans. People involved in this area include programmers, systems analysts, applications professionals, and software development professionals. More information on this option is given in the section devoted to the General Engineering Program which follows.

Graduate programs of study in Computer Science and in Information Systems are offered by the Departments of Electrical Engineering and Industrial Engineering. These programs are described fully in the Graduate School of Engineering catalog which can be obtained by writing to the School's director at 214 Hayden Hall.



Part-time Program Offered During Evening Hours

The College of Engineering also offers an eight-year curriculum leading to the degree of Bachelor of Science in Electrical, Mechanical, or Civil Engineering. Classes are held in the evening. Admission and course requirements are the same as for the degree under the Cooperative Plan. For further information, consult the evening bulletin of the College of Engineering, or call the Dean of Engineering's office.

General Description of Programs

The undergraduate academic program begins with three quarters of full-time study. Course work during the first year builds students' understanding of mathematics and the physical sciences and improves their ability to communicate ideas both verbally and graphically.

Since the first year of study is nearly identical for all students in the College, the choice of specialization may be changed at the end of the freshman year without loss. The freshman courses act as a foundation for upper-class studies which will develop basic understanding of concepts in the engineering sciences and introduce the student to the engineering method and its application. About four-fifths of the upper-class program is devoted to scientific and technological study, and about one-fifth to humanistic-social courses, with the aim of balancing the students' growing technical proficiency with a similar development of their appreciation of the nontechnical aspects of society and culture.

Cooperative work in the branch of engineering chosen will begin upon completion of the freshman year and continue throughout the remaining upper-class years. The work assignments during this time will prove to be most valuable in helping to integrate the important elements of both an engineering and a liberal education. They will be instrumental in teaching the value of teamwork while, at the same time, helping the student to acquire insight into the problems of actual engineering practice.

Graduation Requirements

Degrees The College awards the Bachelor of Science degree in Chemical, Civil, Electrical, Industrial, and Mechanical Engineering, as well as the Bachelor of Science degree without specification.

Qualification for Degrees Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify with no academic deficiencies. Students who undertake cooperative work assignments must complete a minimum of four quarters of cooperative work experience approved by the Department of Cooperative Education to have the cooperative work designation indicated on their transcript.

Students transferring from another college or university are not eligible to receive the Bachelor of Science degree until they have completed at least one academic year at Northeastern immediately preceding their graduation.

Graduation with Honor

Candidates who have attained superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a limited number of this group may be graduated with high honors or with highest honors. Students must have been in attendance at the University at least six quarters before they may become eligible for honors at graduation.

Accreditation

All undergraduate day programs with specification, and the College of Engineering's part-time evening program in Civil and Electrical Engineering are accredited by the Engineer's Council for Professional Development.



Women in Engineering

Recognizing its opportunities, more women are entering the field of engineering every year. Aware of their qualifications and potential, industry and government provide positions of responsibility for competent women engineers. Any woman with scientific or technical interests should consider the many possibilities offered in engineering.

Engineering freshman classes are approaching 10 percent women students. Women in engineering are represented with a Chapter of the Society of Women Engineers, which offers a full schedule of technical and professional programs.

Minorities in Engineering

Through its Progress in Minorities in Engineering (PRIME) program, the College seeks to expand educational opportunities for qualified Blacks, Puerto Ricans, Mexican Americans, and American Indians. It can provide scholarships based on merit and/or need. Every effort is made to provide enough aid so that outside work is not necessary during the freshman year. Guidance counseling and tutorial services are among the supportive services provided by the program.

For more details, contact David C. Blackman, Director, Minority Affairs; 114 Hayden Hall, Northeastern University, Boston, Massachusetts 02115.

Sample Freshman-Year Program of Studies in Engineering

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all designated majors in the College.

First Quarter

Fortran Programming
Calculus
Physics
English

Third Quarter

Calculus
Physics
General Chemistry
English

Second Quarter

Graphics and Design
Calculus
Physics
General Chemistry

The first-year pattern of two-term courses may vary according to assigned section.

In addition to the above courses, a student may elect to take Basic ROTC.

Chemical Engineering Department

Ralph A. Troupe, Ph.D., *Professor and Chairman*

Professors

John A. Williams, Ph.D.

Instructor

James Mbu, Chem. Eng.

Associate Professors

Ralph A. Buonopane, Ph.D.

Bernard M. Goodwin, Sc.D.

Richard R. Stewart, Ph.D.

Assistant Professors

Neil G. Sweerus, M.S.

Professional Preparation

Aims Since the field of chemical engineering is so varied, the program of study has been designed to provide students with the opportunity for broad training in which fundamental principles are stressed. This training offers them the opportunity to develop the ability to acclimate themselves readily to graduate school or to whatever industry they may choose. The faculty stresses the principles of environmental control, conservation, and technology assessment to emphasize the importance of the engineer's role in society.

Description of Major The chemical engineer has been defined as a "professional man experienced in the design, construction, and operation of plants in which materials undergo chemical and physical change." It is the task of the chemical engineer to reduce the costs, increase the production, and improve the quality of the products in the industry.

Chemical engineering has grown out of the discoveries in the chemical laboratories which have served as a foundation for a great many new industries whose production processes involve chemical as well as physical changes.

Petroleum refining, plastics, manufacture of synthetic fibers, and hundreds of other industries require men and women trained in chemistry as well as in engineering. Moreover, much of the training received by the chemical engineer is now being applied to the rapidly developing fields of nuclear engineering, space engineering, and environmental controls. Many older industries, such as foods, textiles, paints and varnishes, and leather are also employing chemical engineers, for the purpose of benefiting mankind rather than contributing to pollution or waste of resources.

A View of the Five-Year Major After students have taken the fundamental courses in chemistry, mathematics, and physics, required of all engineering students, they may go on to advanced courses which apply these fundamentals to the solution of engineering problems. These upper-class courses are a skillful blend of the latest mathematical and theoretical analyses with the practical aspects of the profession.

Chemical Engineering is one of the fastest growing major fields of engineering. Tremendous growth is occurring in research and development, especially in such fields as petroleum and chemicals. (About one-third of all chemical engineers are employed in these fields.)

Accreditation

The Department is accredited by the American Institute of Chemical Engineers as well as by ECPD. Stated simply, this means that these agencies approve of the program.

Laboratories

The chemical engineering laboratories are designed to acquaint the student with the experimental approach to the solution of engineering problems and to develop research interests. Graduate research may be conducted in the areas of environmental control, energy conservation and transformation, technology assessment, photoreactions, process dynamics, control theory, computer applications, kinetics and design.

Experimental Methods Laboratories—Students are first taught the basic measurements in engineering with emphasis on temperatures, pressure, and flow rate. Following this, they are given problems involving such areas as transport properties, kinetics, thermodynamics, and process dynamics, which they must solve experimentally. They are required to design the experiment, conduct it, reduce the data using computers, and write a final report. In the experiments, they use pilot scale chemical engineering equipment when applicable.

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College. See page 78.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
*English	8	†Physics	4
*General Chemistry	8	†Physics Lab.	2
*Basic Engineering	8	Math	8
*Calculus	12	Economics	8
*Physics	12	Social Science/Humanity	
†Calculus	8	Electives (4)	16

II. Professional Requirements

Course	Q.H.	Course	Q.H.
†Organic Chemistry	8	Experimental Methods	8
†Polymer Technology	4	Chemical Engineering	
†Chemical Engineering		Thermo.	4
Calculations	8	Chemical Engineering	
Chemical Engineering	8	Kinetics	4
Physical Chemistry	8	Design or Research	
Transport Phenomena	8	Techniques Electives	12
		Technical Electives (4)	16

*These courses are usually taken in the freshman year.

†These courses are usually taken in the sophomore year.

Civil Engineering Department

John J. Cochran, P.E., Ph.D., *Professor and Chairman*

Professors

Reginald L. Amory, P.E., Ph.D.
Kenneth M. Leet, P.E., Sc.D.

Associate Professors

Frederic C. Blanc, P.E. Ph.D.
Leroy M. Cahoon, P.E., M.S.
Constantine J. Gregory, Ph.D.
Walter E. Jaworski, P.E., Sc.D.
Michael Kupferman, P.E., Ph.D.
Robert L. Meserve, P.E., M.S.
A. Woodruff Miller, P.E., Ph.D.

(Visiting)

Saul Namyet, P.E., B.S.
James O'Shaughnessy, P.E., Ph.D.
John G. Schoon, P.E., Ph.D.
Irvine W. Wei, P.E., Ph.D.

Assistant Professors

Barbara M. Baum, Ph.D.
Paul F. McManus, Ph.D.
Richard J. Scranton, Ph.D.
Gary Stewart, Ph.D.
Mishac K. Yegian, Ph.D.

Instructors

Gregory Broderick, P.E., M.S.
James Regan, P.E., M.S.
Mikhail Schiller, M.S.
Robert Taylor, M.S.

Professional Preparation

Aims Students in the Civil Engineering Department have the opportunity to prepare themselves for a professional career in one or several of the areas in which the field is traditionally divided: structures, environmental (water supply, wastewater disposal, air pollution), transportation, soil mechanics and foundations, and construction. A major aim of the program is to provide students with the opportunity to acquire a fundamental, flexible, and rigorous engineering education so that, in view of inevitable change within the field, the graduate will be in a position to build continuously on his or her basic knowledge, thus attempting to alleviate problems of technical obsolescence.

Description of Major Another major aim of the program is to help the student gain a broader vision—of the world, society, and the individual—than that of a one-sided technical program. A wide range of electives in the humanities, social sciences, and the basic sciences tends to encourage students to investigate areas outside their immediate field and to extend their personal interests and involvements. In view of the growing problems of urban overpopulation, congestion, and pollution—and the increased social awareness of concerned individuals—the civil engineer no longer operates, as in the recent past, with the requirements of a construction project or a client's interest solely in mind. Now engineers must address themselves to the larger considerations of the rights of all those affected by their planning decisions or proposed construction.

A View of the Five-Year Major The five-year work-study curriculum is divided into eleven quarters of school and eight quarters of work. The work phase is designed to allow the student to gain insight into all types of activity that the young engineer will normally confront. Thus the well-motivated student can determine from these work experiences what further course work preparation will be required to become successful as a practicing engineer. The work opportunity also attempts to stimulate a certain amount of self-support and independence.

The first years of the in-school curriculum are, for the most part, devoted to



the fundamentals of math, basic sciences, and engineering that comprise the foundation for later professional studies. The final years are devoted to a range of professional subjects, both required and elected. Guidance from a faculty adviser is available throughout the academic program to work out programs for each individual.

The curriculum is thus intended to provide a firm basis for the preparation of the student to take up the design and construction of structures, to solve problems in the field of transportation, and to handle the design of environmental systems as a civil engineer.

Upon completion of the requirements for the Bachelor of Science in Civil Engineering, the graduate may choose to enter the engineering profession or to go on to graduate school for advanced training. The young civil engineer will probably find that graduate work is a necessary adjunct for advancement.

During one's first period of employment as a graduate, the civil engineer may expect to spend a period in the field or the office. The work will probably involve design computations, layout work and supervision of construction, or the obtaining and analyzing of information for studies and reports. As experience is gained, the graduate will be better prepared to be entrusted with greater challenges and more responsibilities.

Graduates normally seek employment at municipal, state, and federal levels, in private consulting practice, general construction, and industry.

Part-Time Program

The Civil Engineering Program is also available on a part-time basis. The classes are scheduled during the evening hours, usually two evenings per week. The curriculum can be completed in a minimum of eight years.

Transfer programs for students with Associate Degrees or Bachelor's Degrees in Civil Engineering Technology can be arranged in either the day co-op or the part-time program.

Research Activities

Sponsored research is currently being undertaken in a variety of areas, including 1) Characterization of Solids Behavior in and Variability Testing of Selected Techniques for Combined Sewer Systems, 2) Nitrification and Denitrification of Wastewater Using Rotating Biological Contactors, 3) Effective Length Factor for Compression Members in Frames with Trusses, 4) A Finite Difference Computer Program to Study Groundwater Flow and Seepage through Earth Structures, 5) Non-Darcy Flow through Porous Media, 6) Porous Pavement Evaluation for Surface Runoff Control, and 7) Dynamic Response of Seismically Loaded Piles.

Numerous unsponsored projects are also underway in the Structural Mechanics, Transportation, and Environmental Engineering areas.

Professional Society

Our Student Chapter of the American Society of Civil Engineers is very active. In addition to traditional activities which include professional speaker series and field trips, members have also undertaken numerous significant community service projects.

The students have developed and designed innovative and educational outdoor play exhibits illustrating both natural and man-made phenomena for the Children's Museum of Boston. They have participated, in conjunction with the Southwest Corridor Community Farming Project, in the design and construction of a solar-heated greenhouse. Currently, they are working with staff members of the Joseph P. Kennedy, Jr. Memorial Hospital for Children in the planning, designing, financing, and construction of a special playground for handicapped children.

In recognition of their efforts, our Student Chapter has been designated as the "single most outstanding" chapter in the nation, and consequently has received the Ridgway Award of the American Society of Civil Engineers for two consecutive years.

Computer Facilities

The Civil Engineering Department makes use of a variety of computer facilities to complement course work and research. Direct access to the University's computer is available through numerous remote terminals. In addition, two minicomputers are housed in the Department: a Hewlett Packard System 45 with interactive graphics, and a Digital LSI-11. All systems are supported with sophisticated software packages with applications to all the disciplines of Civil Engineering.

Laboratories

Soil Mechanics and Materials Testing Laboratories The soils laboratory is equipped to perform standard soils tests, as well as model studies.

A wide range of laboratory equipment permits students to perform tests ranging from nominal soil classification tests to sophisticated triaxial strength tests. The triaxial tests can be of strain-controlled loading, stress-controlled loading, or a combination thereof. Pore-pressure measurements are made either electronically with pressure transducers or manually with null-pressure indicators.

Consolidation test equipment of various load ranges and types is available. Consolidation tests applying loads up to 50 tsf on the sample are possible. In addition, the test may be conducted using back-pressure technique to saturate the soil sampler.

Facilities are available for testing structural materials such as steel and Portland Cement concrete.

Research can be conducted to study the seepage problems associated with earth dams, open-braced cuts, and similar situations. In addition, model studies on the behavior of footings or piles are possible for both static and cyclical loading conditions.

Hydraulics Laboratory The laboratory is primarily for demonstration purposes. Equipment consists of a flume with a varying gradient, water-quantity measuring devices, such as Short Tube, Orifices, Weirs, Venturi Meter, and Reynolds Number. Research work can be conducted on many of the units.

Water-Quality Laboratory Capabilities include analyses of both water and wastewater samples, in physical, chemical, and biological regimes. Laboratory and supporting equipment enable complete studies in the following areas: water analyses, wastewater analyses, trace metal and organic analysis, stream and estuary studies, waste-treatability studies, unit operations, bioassay techniques, pilot plant studies, tracer studies, and complete instrument analyses.

Instrument analyses capabilities include atomic absorption, total carbon, organic carbon, specific ions, gas chromatography, spectrophotometric and gravimetric analyses.

Special areas are available for unit operation studies in water and wastewater treatment. A well-equipped machine shop has been established so that special equipment can be designed and built for model-prototype studies.

The Gillette Environmental Research Laboratory is fully equipped for research and development work in connection with the program in Environmental Engineering and Science.

Air Pollution Laboratory Equipment is available to sample ambient air, gaseous and particulate pollutants; and for evaluation of the physical, chemical, and biological characteristics of atmospheric pollutants. Continuous air samples may be established in any area in Metropolitan Boston and the samples analyzed by ultraviolet-visible, fluorescence, and atomic spectrophotometry, as well as gas chromatography and infrared techniques. A portable carbon-monoxide analyzer with printout equipment is available for measurement studies and research work. Research in air pollution problems is a continuing project.

Recent equipment additions make it possible to conduct studies in noise pollution.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
*English	8	†Physics	4
*Calculus	12	†Physics Lab.	2
*Basic Engineering	8	†Economics	8
*Physics	12	Math	8
*Chemistry	8	Public Speaking	2
†Calculus	8	Social Science/ Humanity Electives (5)	20

II. Professional Requirements

Course	Q.H.	Course	Q.H.
†Thermodynamics	4	Professional Electives— 7 required	
†Engineering Measurements	6	Civil Engineering Systems	4
†Structural Mechanics	8	Structural	
Dynamics	4	Analysis II, III	8
Materials	4	Structural Design II	4
Fluid Mechanics	4	Concrete Design II	4
Electrical Engineering	4	Hydraulic Engineering	4
Soil Mechanics (w. Lab.)	6	Engineering Geology	4
Environmental Engineering I	4	Foundation Engineering	4
Concrete Design I	4	Transportation	
Structural Design I	4	Engineering	4
Structural Analysis I	4	Probability for Civil Engineering	4
		Environmental Engineering II, III	8
		Environmental Design	4
		Air Pollution	4
		Statistics	4
		Engineering Economy	4
		Construction Engineering	4
		Highway Engineering	4
		Structural Mechanics III	4
		Geotechnology	4
		Technology Assessment	4
		Legal Aspects of Civil Engineering	4

*Usually taken in the freshman year.

†Usually taken in the sophomore year.

The sample Freshman-Year Program for the College of Engineering is the same for all majors in the College. See page 78.

Electrical Engineering Department

J. Spencer Rochefort, M.S., *Professor and Chairman*

Professors

Sze-Hou Chang, Ph.D.
Basil L. Cochrun, M.S.
Ladislav Dolansky, Ph.D.
James M. Feldman, Ph.D.
Kenneth I. Golden, Ph.D.
Arvin Grabel, Sc.D.
John G. Proakis, Ph.D.
Harold R. Raemer, Ph.D.
Wilfred J. Remillard, Ph.D.
Mulukutla S. Sarma, Ph.D.
Martin Schetzen, Sc.D.
Walter C. Schwab, Ph.D.
Robert D. Stuart, Ph.D.

Associate Professors

Marcello J. Carrabes, M.S.
Robert A. Gonsalves, Ph.D.
Richard Grojean, M.S.
Sheila Prasad Hinchey, Ph.D.
(Visiting)

Martin Kaliski, Ph.D.
Wayne G. Kellner, Sc.D.
Robert J. Lechner, Ph.D.
Walter H. Lob, M.S.
Morton Loewenthal, Ph.D.
Robert N. Martin, M.S.
Louis J. Nardone, M.S.
Sheldon S. Sandler, Ph.D.
Michael Silevitch, Ph.D.

Assistant Professors

John D. Glover, Ph.D.
Alakanda Paul, Ph.D.
(Visiting)

Instructors

Wai Li Tsang, M.S.
Iftekhhar Rahman, M.S.



Professional Preparation

Aims Electrical engineers have been primarily responsible for the development of the computer, the pacemaker, television, satellite communication, space navigation, and the means of providing the energy needed to light our cities and towns and run our industries. At present, electrical engineers are also working to help find solutions to the problems of air pollution, transportation, and health care. These examples are just a small sample of the growing wealth of evidence which indicates that electrical engineering has impact on all facets of our society. As with all branches of technology, the societal functions and aims of electrical engineering are to maintain and improve the quality of life.

Description of Major Despite the diversity of its application, electrical engineering may be conveniently divided into the two broad, general areas of *information sciences* and *energy resources*. The area of information sciences is concerned primarily with systems whose function is computation, communication, or control. Included in this area are the circuits and devices which comprise the systems and the application of the systems and engineering techniques to other disciplines. Energy resources deal with the problems related to the sources, generation, and distribution of large quantities of electrical energy. It should be noted, however, that no rigid boundary exists between the two areas, and many of the technical specialties within electrical engineering are applicable to both areas.

Many electrical engineers are involved with the more traditional activities of system design and development, such as the information sciences or energy resources area. Other electrical engineers apply the knowledge gained in their professional education to such disciplines as ocean exploration, meteorology, experimental psychology, electronic music, health-care systems, bio-electronics, and educational devices for the disadvantaged.

The optimistic outlook for electrical engineering is based on the breadth of the technical activity described above. We are constantly reminded that among

the pressing problems in our society are the "energy crisis," pollution, urban transportation, housing, health care, and the plight of the socially and physically disadvantaged. No one has yet been able to forecast how these problems will be solved without the use of technological resources. Readily available electrical energy, data processing, electronic instrumentation and control, and communication are among the crucial resources needed.

A View of the Five-Year Major The purpose of the curriculum is to provide the student with an education that has the breadth and depth necessary for professional practice. Breadth is needed to give the student an awareness of all that electrical engineering encompasses and to provide the necessary background for self-study, a major criterion for professional success. Individual career objectives and initial professional achievement can result in part from learning a subject area in some depth. To achieve the balance between depth and breadth, the curriculum is divided into the *core program* and *elective courses*.

The core program includes those courses whose content is applicable to all specialties in electrical engineering. In addition, it provides the student with exposure to all areas in E.E. and a basic background for future learning. Subject areas covered in the core program are:

1. Circuits and Systems
2. Electronic Devices and Circuits
3. Digital Computer Design
4. Electromagnetic Theory
5. Electromechanical Dynamics (Energy Conversion)
6. Electrical Measurements (Laboratories)

The elective courses are designed to permit students to develop their own interests. Many students use this part of the program to learn a particular subject in depth and also to better prepare for graduate studies. A broad range of courses is offered and includes: Digital Computer Techniques, Numerical Methods, Communication Systems, Control Systems, Advanced Electronics, Solid-state Devices, Power Systems, Wave Propagation and Distributed Circuits, Network Theory, and Mathematical Techniques in E.E.

In addition, students who wish to do individual projects or learn about a subject area not offered in an elective course may enroll in the senior project course. The student in this course works with an interested faculty adviser on a one-to-one basis.

Electrical engineering graduates of Northeastern have attended and done well at all of the prestigious graduate schools. Those who have entered industry find they compare favorably with graduates of other institutions and many have risen to positions of leadership in their professions.

Five-Year B.S.-M.S. Program

Students with high QPA's may elect the five-year B.S.-M.S. program. By taking some overloads and foregoing one senior co-op term, a student may complete requirements for both the B.S.E.E. and M.S.E.E. degrees within five years.

Power Systems Engineering

The Power Systems Engineering Program in Electrical Engineering is a special option for those who wish to specialize in energy resources. This program is conducted in cooperation with the electric power companies in New England and other eastern states. The master's degree can be obtained in six years of cooperative education, or one may follow the five-year B.S.-M.S. program described above. For further information about this program, students are advised to contact Dean Phillip R. McCabe, Admissions, 150 Richards Hall.

Computer Engineering



The option in Computer Engineering is provided for those who wish to specialize in the design of digital computers and their integration within larger systems for communications, resource management, and automatic control.

In the design of a digital processing system, hardware and software must be considered as an integrated entity. Software cannot be separated from hardware considerations; thus, the computer engineer must be both a capable programmer and a capable hardware designer. The collective demands of computer engineering plus traditional electrical engineering encompass more knowledge than can be included in a single, highly structured, degree program. The solution at Northeastern, as at many other schools, was to adopt a new undergraduate option within Electrical Engineering. The objective of this option is to provide the student with a basic and comprehensive knowledge of the principles that underlie the organization, design, and applications of digital processing systems. It encompasses both the hardware and software design aspects of the system. Moreover, it must provide an understanding of the important relationships and "trade-offs" between the hardware and software components of a digital system. This understanding is necessary in order to create computer systems that satisfy the users' needs at a price they can afford.

The Computer Engineer option follows curriculum recommendations in the report "An Undergraduate Computer Engineering Option for Electrical Engineering" by the Cosine Committee of the Commission on Education, National Academy of Engineering, Washington D.C. 20418 (January, 1970). An important feature of this option is that it leads to a Bachelor of Science degree with specification—a degree in Electrical Engineering accredited nationally by the Engineers Council for Professional Development (ECPD).

Laboratories

The seven laboratory courses are an integral part of the educational process. Their purpose is both to supplement concepts developed in core courses and to introduce the student to design and experimental techniques.

To provide this facet of the educational experience, the department has laboratory equipment in excess of \$1.5 million. In addition to standard professional laboratory equipment, several specialized laboratory facilities are maintained. These include several small digital computers such as the PDP-8, a PDP-11, LSI-11, an analog computer, a number of CRT Terminals, a variety of micro-processors, and a semiconductor devices laboratory, in which students fabricate transistors and integrated circuits. Programming courses and research programs also use the large computer system at Northeastern's Computation Center.

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College. See page 78.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
*Calculus	12	†Calculus	8
*Physics	12	†Physics Lab.	2
*General Chemistry	8	†L.A. Electives (2)	8
*English	8	Math Analysis	8
*Basic Engineering	8	Social Science/	
†Physics	8	Humanity Electives	20

II. Professional Requirements

Course	Q.H.	Course	Q.H.
†Circuits and Systems I & II	8	Field Theory I & II	8
Circuits and Systems III & IV	8	Material Science	4
Discrete Systems	4	Design and Organization of Digital Computers	4
Thermodynamics	4	Electronics III	4
Mechanics	4	Electromechanical Dynamics	4
Electrical		Technical Electives (4)	16
Engineering Lab.	8		
Electronics I & II	8		

*Usually taken in the freshman year.

†Usually taken in the sophomore year.

The Electrical Engineering Department offers a wide variety of technical electives. These enable students to coordinate elective choices to satisfy their personal objectives of breadth or depth. To aid in selection, the elective courses are grouped by discipline.

Technical Electives**Electronic Circuits and Systems**

Selected Topics in Electronics
Theory & Tech. of Semicond. Dev. I
Theory & Tech. of Semicond. Dev. II
Senior Project Labs
Control Systems
Communication Theory
Math Techniques in E.E. I & II
Numerical Methods & Computer
Applications
Digital Techniques

Electromagnetic Theory

Wave Transmission & Reception
Advanced Topics in E & M
Math Techniques in E.E. I & II
Numerical Methods & Computer
Applications
Theory & Tech. of Semicond.
Devices I & II
Senior Project Labs.

Computer Sciences

Numerical Methods & Computer
Applications
Digital Techniques
Fundamentals of Computation
Structures
Introduction to Theory of Digital
Computation
Communication Theory
Control Systems
Math Techniques in E.E. I & II
Selected Topics in Electronics
Applied Discrete Analysis
Machine & Assembly Language
Programming
Programming Systems
Microcomputer-Based Design
Senior Project Labs.

Systems Theory

Control Systems
Communication Theory
Math Techniques in E.E. I & II
Numerical Methods &
Computer Applications
Digital Techniques
Power Systems I & II
Wave Transmission & Reception
Senior Project Labs.

**Power Systems Option Leading
to B.S. Degree-5 years
M.S. Degree-6 years**

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
*Calculus	12	†Calculus	8
*Physics	12	†Physics Lab.	2
*General Chemistry	2	†Electives	8
*English	8	Math Analysis	8
†Physics	8	Social Science/ Humanity Electives (6)	24

II. Professional Requirements

Course	Q.H.	Course	Q.H.
†Circuits and Systems I & II	8	E. E. Power Lab.	4
Circuits and Systems III & IV	8	\$Math. Methods in E.E.	4
Thermodynamics	8	Nuclear Engineering	4
Electrical Engineering Lab	4	Technical Electives	4 or 8
Electronics I & II	8	Energy and Public Policy	4
Field Theory I & II	8	\$Linear Systems Anal.	4
Transients in Power Systems	4	Anal. of Power Systems	4
\$Probability	2	\$Seminars (2)	4
Electromechanical Dyn.	4	\$Power Systems Planning	4
Mechanics	4	\$Special Topics in Power	2
Machines and Systems	8	\$Grad. Electives	16
Electric Power Systems	8	\$Computers in Pwr Systems	4
Professional Development	0	\$Electric Machine Theory	2
		\$Electromagnetic Theory	4

*Usually taken in the freshman year.

†Usually taken in the sophomore year.

\$Graduate courses, and are not needed for the B.S. degree.

**Computer Engineering Option
Leading to B.S. Degree-5 years**

I. General Requirements:

Same as general E.E. except for deletion of one 4 Q.H. required math analysis course and one 4 Q.H. liberal arts elective.

II. Professional Requirements:

Same as general E.E. except for the deletion of one 4 Q.H. required E.E. course (Electromechanical Dynamics) and one 4 Q.H. technical elective and the following additional required courses:

Course	Q.H.	Course	Q.H.
Introduction to Digital Computers II	4	Machine Language and Assembly Language	
Programming Systems	4	Programming	4

Industrial Engineering and Information Systems Department

David R. Freeman, Ph.D., *Professor and Chairman*

Professors

Wilfred P. Rule, M.S.

Associate Professors

Franklyn K. Brown, M.Ed.

Lewis H. Geyer, Ph.D.

Stewart V. Hoover, Ph.D.

Thomas E. Hulbert, M.S.

Robert S. Lang, M.S.

Kenneth S. Woodward, M.S.

Assistant Professor

Surendra M. Gupta, Ph.D.

Joseph I. Herzlinger, M.S.

Karen Lamone, Ph.D.

Nonna Lehmukhul, M.S.

James R. Maiellano, M.S.

Ronald F. Perry, Ph.D.

Robert Poe, Ph.D.

Instructor

James Bartlett, M.S.

Lawrence A. Bookman, M.S.

Pamela Halpern, M.S.

Professional Preparation

Aims Industrial engineers assist management in making decisions involving the utilization of men, materials, equipment, and energy to achieve the goals of an organization. Management needs factual information which defines the consequences of alternative decisions. The industrial engineer collects and analyzes this information and evaluates alternatives, thereby helping the manager to make the decision which best achieves a particular organizational goal. The scope of decisions may involve the entire organization, or some portion of it which is associated with a given product or service.

Traditionally, industrial engineers have been most widely employed in manufacturing organizations, but increasing numbers are now being utilized by service industries, such as the airlines, banks, hospitals, and local and federal government agencies. Courses in the curriculum reflect the industrial engineer's interest in changing attitudes in society about computers, population growth, pollution, and the quality of life.

Another responsibility of the Department of Industrial Engineering and Information Systems is to provide a comprehensive view of what engineering is all about. Students are confronted with several problems similar to those they will encounter during their professional career. Methods of problem solving and graphic representation of solutions are emphasized so that the student will learn some of the ways engineers communicate through drawings and sketches. The role of an engineer as a creative designer is described by relatively large case studies that show the step-by-step solution to specially chosen problems that cut across several engineering disciplines.

Another important aspect of the Department is in the area of computers. The Department offers courses in FORTRAN, COBOL, SPSS, and other languages to the entire University community. Each of these courses is heavily involved in applications to show the diverse ways in which the power of the computer may be applied to problems in areas such as engineering, social sciences, the humanities, and business.

When possible, students are instructed in the use of large discipline-oriented software packages that provide comprehensive and sophisticated problem algorithms, but require a minimum amount of original programming to use.

Description of Major In performing problem analyses, the industrial engineer is concerned with complex, integrated man-machine systems. To treat the machine elements of the system, the industrial engineer requires knowledge of engineering fundamentals in addition to some background in the behavioral sciences to understand how the human elements of the system operate and how they relate to each other and the machines.

A View of the Five-Year Major The program is designed with extensive course work in mathematics, physics, science, and the engineering sciences. The first two years provide the student with the opportunity to build a strong foundation for use in later course offerings.

The required program affords an opportunity to develop a strong base in probability, statistics, operations research, and computer systems. Courses in work design, personnel and organizational behavior, and engineering economy provide an exposure to the problems frequently encountered in Industrial Engineering. Elective offerings in the last few years provide an opportunity for students to familiarize themselves with other areas of Industrial Engineering such as plant layout, quality control, simulation, management information systems, and production and inventory control.

The Computer Students are required to learn basic computer programming in their first year. In later years, they are asked to solve complex problems by computer. The computer is of particular interest to the industrial engineer since many complex problems, such as assembly line balancing, mathematical modeling, and industrial simulations require a computer solution. Special software packages are available to the student for use in the above areas of concern to the industrial engineer.

Five-Year B.S.-M.S. Program

An accelerated program is available for honor students. It allows completion of the requirements for both B.S. and M.S. degrees in five years by overloads starting in the third year and the elimination of the senior co-op term.

Laboratories

Integrated Laboratory The new Industrial Engineering Laboratory is an integrated lab used for a variety of different courses. Directly associated with the lab classroom is the computer console room utilized in quite a variety of courses, the copying equipment for use in the plant layout courses, and the machine tool lab for use in work design and manufacturing courses. Students work as individuals or in groups, depending upon the scope and complexity of the project. Extensive laboratory project work is also conducted in outside industrial plants and service organizations on real problems. Students can view actual operations on occasional plant visits.

Human Factors Laboratory The laboratory is used to perform experimentation in perception. The facility is used for demonstration and student projects.

Computer Laboratory A facility with two minicomputers provides an opportunity for students to gain actual experience in operating a small computer and utilizing it for real-world application. The facility also houses terminals for communication with the University computer system.

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College. See page 78.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
*Calculus	12	†Physics	4
*Physics	12	†Physics Lab.	2
*General Chemistry	8	†Economics I & II	8
*English	8	\$Math Elective	4
*Basic Engineering	8	Public Speaking	3
†Calculus	8	Social Science/ Humanity Electives	20

II. Professional Requirements

Course	Q.H.	Course	Q.H.
†*Work design	4	Personnel and Organizations	4
**†Engineering Science Elective	4	Engineering Economy and Statistical Decision Theory	4
†Probability Analysis	4		
Statistics I & II	8	**Engineering Science Electives (4)	16
Industrial Cost Control	4	††Technical Electives (5)	20
Operations Research	8		
Systems Analysis I & II	8		

*Usually taken in the freshman Year.

†Usually taken in the sophomore year.

\$Differential equations or suitable offering of Math Department, with consent of the adviser.

* *Five Engineering Science courses are required. They must include:

Principles of Computation and Programming I

Mechanics

Electrical Engineering I

The remaining courses may be selected from:

Principles of Computation and Programming II

Electrical Engineering II

Mechanics II

Flow of Fluids

Thermodynamics I

Materials Science

††Five Technical Electives are required. Three must be Industrial Engineering Electives:

Production Planning

Facilities Design

Quality Control

Management Information Systems

Digital Simulation

World Dynamics

Manufacturing Processes

Human Factors

Industrial Relations

Human Considerations in Design

Mechanical Engineering Department

Welville B. Nowak, Ph.D., *George A. Snell Professor and Chairman*

Professors

John F. Dunn, Sc.D.
Arthur R. Foster, M.Eng.
Melvin Mark, Sc.D.
John N. Rossettos, Ph.D.
Joseph J. Zelinski, Ph.D.

Assistant Professors

Gregory Kowalski, Ph.D.
Ahmet Talug, Ph.D.

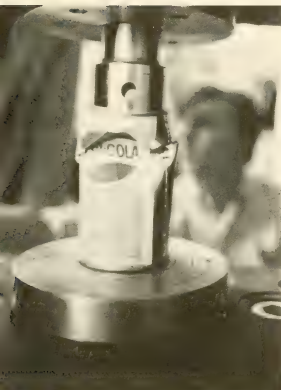
Instructors

Steven A. Miller, M.S.

Associate Professors

Ralph S. Blanchard, M.S.
H. Frederick Bowman, Ph.D.
John W. Cipolla, Jr., Ph.D.
Alexander M. Gorlov, Ph.D.
Bertram S. Long, M.E.
Ernest E. Mills, M.S.
Richard J. Murphy, Ph.D.
Warren G. Nelson, Sc.D.
Alvin J. Yorra, M.S.
John Zotos, Met. Eng.

Professional Preparation



Aims Mechanical Engineering is the branch of the science which is broadly concerned with energy, including its transformation from one form to another, its transmission, and its utilization. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of a wide variety of devices, machines, and systems—including complex Man-machine systems—for energy conversion, environmental control, materials processing, transportation, materials handling, and other purposes.

Mechanical engineers are engaged in all the engineering functions, including creative design, applied research, development, production, and management. The field of mechanical engineering is broad, providing an excellent professional base for career choice and interdisciplinary activities.

Description of Major The curriculum is intended to accommodate changing demands on the mechanical engineer by offering a firm foundation in the basic sciences before students direct their studies toward a chosen area of interest.

A View of the Five-Year Major In the first three years, students have had the opportunity to learn the basic sciences (mathematics, physics, and chemistry), the engineering sciences (mechanics, thermodynamics, fluid mechanics, and material science), and the humanities. As upperclassmen, they may choose to concentrate their studies in the areas of thermofluid engineering, mechanics and design, or materials science and engineering.

Thermofluid engineering is concerned with the properties and characteristics of the working fluid of machines. For example, the ability of an aircraft to fly depends upon the manner in which air flows over its lifting surfaces. The energy to run a turbine is extracted from the steam or combustion gases which pass through it. The engineer must understand and have a knowledge of the concepts of thermodynamics. The efficiency of a cooling tower depends upon the mechanisms by which fluids transfer heat to surfaces, so the engineer must have a firm grasp of the principles of heat transfer.

Mechanics and design are based upon the fundamental scientific and mathematical tools which are utilized in the analysis of mechanical configurations as they evolve in the design of machines and power-producing devices. For example, the engineer in the area of mechanics and design may analyze and design plate and shell components for nuclear power plants and deep-sea oceanographic vessels or develop new methods for evaluating filamentary composite structures. In the modern machine tool industry, engineers may be concerned with computer control of machine tools; in the engine industry, they may analyze stresses in such components as turbine blades. To prepare for this, the upper-class students will have the opportunity to expand their basic knowledge by selecting such courses as Experimental Stress Analysis, Advanced Strength of Materials and Deformation of Solids, Vibrations, Numerical and Computer Methods in Engineering Analysis.

Materials science and engineering is concerned with relationships among the structure, composition, properties, and functions of materials and with control of the structure and composition to achieve desired properties. Only recently have engineers come to realize that an understanding of the principles of materials science enables them to design more creatively and with greater freedom than the traditional reference to handbooks. Examples of areas where mechanical engineers find materials properties a part of the basic design function are: manufacturing techniques, structures (vehicles, buildings), energy conversion, electronic devices (including computers), packaging, and prosthetic devices. Advanced courses are available for those mechanical engineers who desire further knowledge in the materials field.

Five-Year B.S.-M.S. Program Honor students may take an accelerated program. It allows completion of the requirements for both B.S. and M.S. degrees in five years by overloads starting at the third year and the elimination of the senior co-op term.

Special Information

Mechanical Engineering Laboratories

The laboratories in Mechanical Engineering contain equipment ranging from an electron microscope and ultrasonic measuring devices to pumps and weirs. Students working on thermofluids projects may use a turbine, various types of engines, thermoelectric coolers and generators, and a supersonic wind tunnel, to name a few. Material science provides research microscopes, various furnaces, a fluid-to-fluid extrusion press, x-ray diffraction equipment, electron microscope, and other related equipment. For the mechanics and design areas, vibrations, experimental stress analysis and materials testing facilities are provided. An effort is made by the Department continuously to update and replace laboratory equipment.

Computers

Analog computers as well as time-sharing terminals give the laboratories both digital and analog capacity.

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College. See page 78.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
*English	8	†Physics	4
*General Chemistry	8	†Physics Lab.	2
*Basic Engineering	8	†Social Science/Humanity	
*Calculus	12	Electives (2)	8
*Physics	12	Math. Analysis	8
†Calculus	8	Social Science/Humanity	
		Elective	4

II. Professional Requirements

Course	Q.H.	Course	Q.H.
*Mechanics I & II	8	Measurement and	
†Thermodynamics I	4	Analysis	4
Thermodynamics II	4	Fluid Mechanics	4
Mechanics III & IV	8	Materials Science	5

Junior and Senior years

There are twelve courses to be selected by juniors and seniors in addition to four Liberal Arts Electives. All elective courses are subject to departmental restrictions. The student should obtain the latest departmental booklet describing these restrictions and current course offerings.

**Usually taken in the freshman year.*

†Usually taken in the sophomore year.



Biomedical Engineering Department

Sam Fine, M.D., *Professor and Chairman*

Professional Preparation

Aims Biomedical engineering is concerned with the scientific principles underlying the physical and biological sciences and their application to problems of biological and medical significance.

Biomedical engineers are engaged in both theoretical and experimental studies, either as independent investigators or as members of a research or development group. They may characterize and determine the mechanism of action of natural and synthetic macromolecules, analyze the properties of blood, and investigate the structure and function of organ systems such as the nervous system, the respiratory system, the cardiovascular system and the endocrine system. They may design, develop, market and apply transducers, cardiac pacemakers and defibrillators, heart assist systems, artificial kidneys and limbs, and diagnostic and therapeutic X-ray equipment. They are important members of the hospital health team.

There is no special curriculum in Biomedical Engineering. Several of the engineering disciplines in this catalog provide the engineer with a background in the physical sciences. The purpose of the Biomedical Engineering Department is to assist the engineering student from the freshman through the senior year in choosing courses in the biological sciences to complement those in the physical sciences and humanities taken in the standard engineering curriculum.

Courses will be chosen without prejudicing the students' obtaining a degree in their field of engineering specialization. In some cases, courses in the biological sciences can be taken as additional work during the student's career at the University. In other cases, courses in the biological sciences can be taken as electives in the standard engineering curriculum. The opportunity to take these courses is dependent on the student's interests, capabilities, and academic record. It is, of course, limited by possible schedule conflicts.

Students who wish to take an engineering program which includes biological sciences must contact the Biomedical Engineering Department on their arrival as freshmen at the University. This is important since biology is substituted in the first year for a portion of basic engineering.

Education in a program involving the physical and biological sciences provides a sound foundation for future studies toward a doctorate in medicine or dentistry, a career in biomedical engineering, or as an engineer in a hospital or governmental agency such as the Department of Health, Education and Welfare, depending upon such factors as the state of the economy, and the student's own industriousness and overall ability. Industrial organizations may be seeking individuals with a strong background in engineering supplemented by a biological science education. Other career opportunities may include public health, the psychological sciences, and the marine sciences.

General Engineering Program



Advisory Committee for 1979-1980

Thomas E. Hulbert, M.S., *Industrial
Engineering, Chairman*

Robert G. Finkenaur, M.S., *Secretary*

Arvin Grabel, Sc.D., *Electrical Engineering*

Richard J. Murphy, Ph.D., *Mechanical Engineering*

Saul Namyet, B.S., *Civil Engineering*

Richard R. Stewart, Ph.D., *Chemical Engineering*

Professional Preparation

Aims Engineering and technology influence all areas of endeavor and have a profound effect on the lifestyle and institutions of the society. The impact is both cultural and scientific and is manifested by the awareness that solutions to society's problems are in part technological. The major purpose of the General Engineering Program is to provide flexible, interdisciplinary educational opportunities based on fundamental engineering concepts. The interdisciplinary nature allows the student to develop other areas of interest in which an engineering background is professionally useful.

Description of Major The program is designed for students whose interests are in engineering-related professions rather than in the traditional profession of engineering. It is expected that the work engaged in by graduates of this program will encompass the entire spectrum of professional activity. Typical areas include computers, urban technology, social systems, and health care.

The General Engineering Program, including the computer science option, is highly elective and gives students the opportunity to develop, in conjunction with their adviser, a program designed to meet their own career objectives. To achieve this goal, the student is exposed to the fundamental engineering areas of electric circuits, systems, mechanics, thermodynamics, and materials. These courses are based on basic principles developed in early courses in mathematics and physics.

As the computer is a basic tool in any technological environment, each student is required to learn the elements of computer programming.

Graduate education and continuing education are increasingly important in professional life. By appropriately planning their program, students will be able to satisfy the course requirements necessary for admission into all types of graduate and professional schools, including law, medicine, public health, and social sciences, as well as engineering.

A View of the Five-Year Major Each student in the program is required to satisfy the following minimum requirements beyond the freshman year:

- 8 quarter hours in Mathematics
- 6 quarter hours in Physics (including laboratory)
- 4 quarter hours in Circuit Theory
- 4 quarter hours in Materials
- 4 quarter hours in Systems
- 4 quarter hours in Thermodynamics
- 16 quarter hours in Social Sciences (consisting of at least two sequences of two courses each from the areas of sociology, economics, political science, and psychology)
- 8 quarter hours in the Humanities, consisting of at least two courses from the areas of art, history, language and literature (not including grammar), music, philosophy, and drama (not including public speaking)

The remaining portion of the program is completely elective but must be designed to fit the student's career objective. At least 24 quarter hours of course work must be taken in the professional departments in the College of Engineering (Chemical, Civil, Electrical, Industrial, and Mechanical Engineering).

Beyond the freshman year, students, in conjunction with a faculty adviser, plan their programs. Basically, the elective program permits each student to plan a distinctive and highly individualistic curriculum. These indicate part of the range of curriculum planning available to students.

Although each student is enrolled in a "different program," the goals of each are the same: the breadth of an engineering-based liberal education in combination with the development of professional skills.

Computer Science Option

Aims Although students of Computer Science concern themselves on the surface with the languages which are used in writing computer programs, their involvement in the study of "software design" goes much deeper than that. They study the application of computers to many fields, such as business, science, and industry. They study the various methods for making the computer simulate large systems (manufacturing systems, hospital systems, transportation systems, or human systems). They consider the various approaches to storing maximum amounts of information in a given computer system's storage devices and minimizing the time it takes to retrieve that information. How to select the best computer system for a particular application is also a concern of a Computer Science student. Since it is possible for errors to creep into computer calculations, they study how such computational errors can be detected and minimized. A newly emerging topic of concern is that of program structure and design—a concern directed at determining the best approach to organizing large programs so that the chance for errors in the programs, the difficulty of detecting those errors, and the cost of error correction will all be minimized.

The Computer Science Option of the General Engineering Program was designed following the recommendations of two large, national, professional societies—the Association for Computing Machinery and the Mathematics Association of America. It is a well-rounded and flexible program in which students are expected to fulfill certain minimum essential course requirements but are given an unusually wide selection of electives from which to choose. In this way, students slant their course work in the direction of the particular field of computer applications which most interests them.

Description of the Five-Year Option The program includes eleven courses in Computer Science, including at least one from each of the following areas: computer languages, computer architecture, computer data structures, and numerical methods or applications programming. The total program must include eleven courses from the College of Engineering (some of these may be from the eleven Computer Science courses referred to above). The program also includes at least six one-quarter courses referred to as coordinated studies. Coordinated studies are a group of courses chosen to meet the student's career objectives in Computer Science. Courses such as Operations Research, Management Information Systems, and Analysis of Financial Data are examples of courses that are taken as coordinated studies.

Also required are five one-quarter courses in Mathematics; four one-quarter courses in Physics; two Physics lab courses; at least two two-quarter courses in either Psychology, Sociology, Anthropology, Political Science or Economics; and at least two one-quarter courses in History, Philosophy, Art, Music, Language, Literature (not including grammar), or Drama (not including public speaking).

Like all other programs in the College, the General Engineering Computer Science Option is conducted under Northeastern's unique Cooperative Education Plan.

Listed below are the course requirements for the freshman and sophomore years. **(Note that students enrolled in the Computer Science Option take a different set of freshman-year courses than other engineering freshmen.)**

Freshman Year

First Quarter

Calculus
Physics
Literature
FORTRAN Programming

Second Quarter

Calculus
Physics
Liberal Arts Elective
COBOL Programming

Third Quarter

Calculus
Physics
Literature
COBOL Programming

Sophomore Year

Fourth Quarter

Calculus
Physics
Physics Lab.
Liberal Arts Elective
Design and Organization
of Digital Computers

Fifth Quarter

Calculus
Physics Lab
Coordinated Studies Course
Liberal Arts Elective
Assembly Language Programming

Middler, Junior, and Senior Years

The last three years of the program are very flexible and designed by the student with the guidance and approval of the academic adviser. A series of computer science courses is included in the curricula, such as Discrete Structures, Systems Programming, Data Structure, Compiler Design, Analysis of Programming Languages, Analysis of Algorithms, and a Computer Science Seminar. The balance of the program includes computer science electives, coordinated studies, engineering courses, and social science/humanities electives.

Lincoln College

William F. King, M.S., P.E., *Director, Associate Dean of Engineering*

Jacob Wiren, M.S., P.E., *Assistant Director*

Rasma Galins, *Assistant to the Director*

Professor

Israel Katz, M.S., *Engineering Technology*

Associate Professors

Borah Kreimer, M.A., *Engineering Graphics*

Ernest E. Mills, M.S., P.E., *Mechanical Engineering Technology*

Louis J. Nardone, M.S., P.E., *Electrical Engineering Technology*

Thomas E. Phalen, M.S., P.E., *Mechanical Engineering Technology*

Professional Preparation

Aims Lincoln College offers programs in engineering technology. Although these programs are concerned with the same general fields of engineering specialization, they concentrate on the applications of technology rather than its development.

Emphasis is placed on the rational processes in converting theories and ideas into practical techniques, procedures, and products. The engineering technologist works with the professional engineer, scientist, medical doctor, supervisor, and craftsman in converting scientific knowledge and craftsmanship into products and techniques. Fundamentals are related to current practice, providing a supportive "why" for the practical "how." At the same time, study of the humanities and social sciences gives an opportunity for students to develop an awareness of the social, economic, and political influences that are part of the real world.

The structure of the Engineering Technology curriculum is based upon the dual need for relevant technical skills and the foundation for future growth. Engineering technology education can assist students to:

1. Understand the scientific principles that govern the current technology of the particular branch of engineering which they select
2. Develop competence in the application of technology to problem-solving
3. Communicate effectively the important implications of technological advancements
4. Acquire the motivation for continued development of technical skills.

A View of the Five-Year Program Lincoln College offers five-year co-operative programs in Mechanical and Electrical Engineering Technology leading to the degree of Bachelor of Engineering Technology with specification according to the curriculum in which the student qualifies.

Since the first year of study is identical for all technology students, a firm choice of major may be delayed until spring. At this time, the choice of co-operative work assignments makes a decision mandatory. Freshman courses act as a foundation for upper-class studies. About four-fifths of the upper-class program is devoted to scientific and technological study and about one-fifth to humanistic-social courses, with the aim of balancing technical proficiency with an appreciation for the nontechnical aspects of society and culture. Co-operative work assignments during the upper-class years are most valuable in helping students to integrate the important elements of both a technical and a liberal education.

Part-Time Program Offered During Evening Hours Lincoln College also offers seven-year curricula leading to the degree of Bachelor of Engineering Technology in the following areas:

- Civil Engineering Technology
- Mechanical Engineering Technology
- Mechanical-Structural Engineering Technology
- Electrical Engineering Technology
- Computer Technology

Classes are held in the evenings and on Saturday mornings. For further information on admission to these programs, contact the Lincoln College office at 219 Hayden Hall.

Graduation Requirements

Candidates for the Bachelor of Engineering Technology degree must complete all of the prescribed work of the curriculum in which they seek to qualify. A total of approximately 180 quarter hours is required for the degree. Students who undertake the Cooperative Education Program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

Students transferring from another college or university are not eligible to receive the degree until they have completed at least one academic year at Northeastern immediately preceding their graduation.

Graduation with Honor

Candidates who have attained superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a limited number of this group may be graduated with high honors or with highest honors. Students must have been in attendance at the University at least six quarters before they may become eligible for honors at graduation.

Facilities

The Northeastern electrical engineering laboratories are patterned after a composite of typical industrial research and development laboratories. Boasting a wide variety of modern testing and measuring equipment, the laboratories are an excellent adjunct to the classroom. Here, students may simulate or fabricate devices or systems which have been studied in their lecture courses.

From light machinery and power equipment to microwave precision systems, students plan and pursue their projects in the laboratory. Four PDP8I Digital Equipment Computers are available in the laboratories for direct programming or use in other laboratory experimentation. In addition, several varieties of microprocessors and associated equipment are used in student laboratories.

The Mechanical Engineering Department includes the following laboratories:

Materials and Metallurgy Laboratories—Equipped to treat the physical examination of materials and their structures. The equipment includes modern apparatus for vacuum melting technology, X-ray diffraction, and thermal expansion studies, two research metallographs, an electron microscope, and fluid-to-fluid extrusion press.

Fluid and Gas Dynamics Laboratory—Designed to study aerodynamic and hydrodynamic phenomena such as vortices, separation streamlines, and shock waves. Equipment includes an aerodynamalog, an axial flow fan, shock tube, subsonic wind tunnel, and a supersonic wind tunnel.

Materials Testing and Stress Analysis Laboratories—Equipped to handle both the destructive and nondestructive testing of materials, this laboratory has a 300,000-pound Universal testing machine which has an automatic electronic stress-strain recorder and high-temperature tensile test furnace. Stresses and strains may be determined experimentally by the use of strain gage, photoelastic, photostress, and brittle lacquer techniques.

Recent additions include vibration-testing units and a fatigue-testing machine of 2,000 pounds capacity.

Heat Engineering Laboratories—Include a refrigeration unit which may also operate as a heat pump; two solid injection diesel engines provided with a continuous oxygen analyzer, one equipped with a strain gage torque meter; a CFR fuels research engine equipped with a strain gage pressure transducer; a 60-h.p. Rover gas turbine with automatic controls and Froude dynamometer; apparatus for study of steam-to-water heat transfer, comparison of film versus dropwise condensation, heat transfer to a boiling liquid, and thermocouple recovery factor; a thermoelectric generator to study the direct conversion of heat into electrical energy; a thermoelectric-refrigeration test facility for development of single and multistage thermoelectric coolers; and a Curtis steam turbine and condenser.

Automatic Control Laboratory—Includes a feedback control system and analog computers for simulation of engineering problems, and fluid power testing units.

Computation Center

The Northeastern University Computation Center is a support arm to the many computer-oriented curricula of the various departments throughout the University. The facility has recently been updated with the installation of a powerful Control Data 6000 series system with time-sharing capability. As the prime computation center as required by the curricula, the Center is used by the students in both the Electrical Engineering Technology and Mechanical Engineering Technology programs.

Aviation Technology

Kenneth S. Woodard, M.S., *Adviser*

Lincoln College also offers a full-time program in Aviation Technology leading to the Associate Degree. This program is based at the Burlington Campus and flying may be done at Wiggins Airways at Norwood or the Comerford Flight School located in Bedford. The Pilot School is approved by the Federal Aviation Administration. Students having a strong interest in flying as an integral part of their careers should contact the Director of the College.

Women in Engineering Technology

Many women enter the technology field each year. Both government and industry provide positions of responsibility for women technologists. Any young woman with technical or scientific interests should consider engineering technology as a career.

The Sample Freshman-Year Program of Studies in Lincoln College is the same for all majors in the College.



Sample Freshman-Year Program of Studies In Engineering Technology

First Quarter

Algebra and Trig. I
Physics I
English/Writing
Engineering Design Graphics I
Prin. Computer Programming I

Second Quarter

Algebra and Trig. II
Physics II
English/Literature
Engineering Design Graphics II
Prin. Computer Programming II
Physics Lab. I

Third Quarter

Calculus I
Physics III
English/Literature
Engineering Design Graphics III
Prin. Computer Programming III
Physics Lab. II

In addition to the above courses, a student may elect to take Basic ROTC.

Electrical Engineering Technology

Louise J. Nardone, M.S., *Coordinator for Electrical Engineering Technology*

Professional Preparation

Aims Since the Bachelor of Engineering Technology (BET) program has been designed to provide trained people for ready assimilation by the engineering field, its main thrust is not aimed at preparing the student for direct admission to the graduate schools of engineering.

However, the BET program can be an avenue of admission to the College of Engineering via several options for the student who achieves above average grades. Students who desire to explore this possibility should contact their freshman adviser or the Director of Lincoln College. In most other cases, graduates of the BET program will be eligible for graduate programs, such as business, law, and education.

Description of Major Electrical engineering technology deals with the design and operation of equipment and systems related to power, communications, data processing, and electrical control. Its major functions are:

1. The generation, transmission, and distribution of electrical energy for light and power purposes
2. The development and production of equipment for telephone, radio, television, radar, and communication
3. The design and construction of data-processing systems and analog or digital computers
4. The application of electrical and electronic devices in the control of processes and manufacture.

A View of the Five-Year Major Since electrical engineering technology derives many of its fundamentals from developments in the pure sciences, the program of study begins with basic courses in mathematics and physics. In addition, the freshman year includes literature and engineering graphics to aid in developing the student's self-expression.

In the upper-class years, courses are divided into five related sequences: circuits and systems, including feedback control; electromagnetic field theory and microwave devices; energy conversion, emphasizing electromagnetic devices; and laboratory work associated with all of the foregoing. Current practice is stressed.

In the senior year, electives are offered to ensure that students acquire depth and specialization.

The Sample Freshman-Year Program of Studies in Lincoln College is the same for all majors in the College. See page 103.

Basic Course Requirements**I. General Requirements**

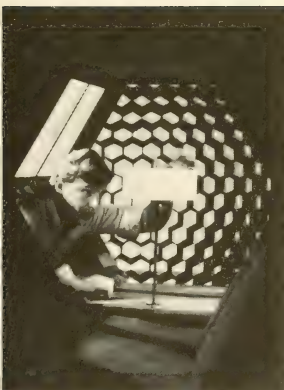
Course	Q.H.	Course	Q.H.
*Algebra and Trigonometry I & II	8	*Principles of Computer Programming I, II, III	6
*Calculus I	4	*Physics I, II, III	12
†Calculus A & B	8	†Physics IV	4
*English	12	*Physics Lab. I & II	2
Principles of Economics	4	†Liberal Arts Electives	8
*Engineering Design		Liberal Arts Electives	12
Graphics I, II, III	6	Technical Electives	26

II. Professional Requirements

Course	Q.H.	Course	Q.H.
†Circuit Analysis I & II	8	Digital Computers	4
Circuit Analysis III & IV	8	Distributed Systems	4
†Physical Electronics	4	†Circuits Lab. I	2
Electronics I, II, III	12	Circuits Lab. II	2
Control Engineering I & II	8	Electronics Lab.	2
Engineering Analysis I & II	8	Advanced Electronics Lab.	
Energy Conversion	4	I, II, III	6
Electrical Measurements	4		

*Courses are taken in the Freshman year.

†Courses are taken in the Sophomore year.

**Mechanical Engineering Technology**

Ernest E. Mills, M.S., *Coordinator for Mechanical Engineering Technology*

Professional Preparation

Aims The objectives of the program are the same as those listed for the Electrical Engineering Technology program.

Description of Major Mechanical engineering technology deals with the use of machinery to harness power resources and perform useful work. In contrast to civil engineering, which deals primarily with static forces and structures, mechanical engineering is more concerned with the motion and kinetics of devices which are activated by hydraulic, electrical, mechanical, or thermodynamic forces. Major functions of the mechanical engineering technologist are:

1. Design and installation of all kinds of machinery, from pocket watches to the largest steel boring mills;
2. Development and production of engines and transport equipment, as in automobiles, aircraft, ships, or railway cars;
3. Construction and operation of furnaces and boilers, as well as heating and air-conditioning equipment, for the control of atmospheric and environmental conditions.

A View of the Five-Year Major Since machinery is predominantly the concern of the mechanical engineer, the program of study is designed to give considerable training in the principles underlying the design and operation of engines, power transmission devices, machine tools, and other machinery. This, of course, implies a thorough study of the physical laws concerning motion and transfer of energy. Applied mechanics, thermodynamics, and study of materials will occupy prominent places in the program.

These studies will thus provide a student with a broad foundation in those fundamental subjects essential to the understanding of current practice. In the junior and senior years, a student will have considerable elective choice and opportunity for specialization.

The Sample Freshman-Year Program of Studies in Lincoln College is the same for all majors in the College. See page 103.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
*Algebra and Trigonometry I & II	8	*Physics Lab. I & II	2
*Calculus I	4	*Engineering Design Graphics I, II, III	6
†Calculus A, B	8	*Principles of Computer Programming I, II, III	6
*English	12	Liberal Arts Electives	20
Principles of Economics	4	Technical Electives	20
*Physics I, II, III	12		

II. Professional Requirements

Course	Q.H.	Course	Q.H.
†Mechanics A, B	8	Mechanical Design	6
Mechanics C	4	Thermodynamics A, B, C, D	14
†Stress Analysis A	4	Fluid Mechanics A & B	6
Stress Analysis B	4	Nuclear Technology	4
†Materials	4	Mechanical Laboratory	6
Engineering Design	4	Heat Laboratory	4
Electricity and Electronics	4	Project Laboratory	4

**Usually taken in the freshman year.*

†Usually taken in the sophomore year.

College of Arts and Sciences

Richard Astro, Ph.D., *Dean*

J. Edward Neighbor, Ph.D., *Associate Dean and Director of Graduate School/Sciences*

Susan E. Rindler, Ph.D., *Associate Dean and Director of Graduate School/Humanities and Social Sciences*

Timothy P. Perkins, M.A., *Assistant Dean (Student Affairs)*

Ruthann T. Stiles, M.A., *Assistant Dean (Faculty Affairs)*



Four- and Five-Year Programs The College of Arts and Sciences offers a wide range of courses and degree programs enabling students to plan a course of study in keeping with their own interests and aptitude. Students in the College may earn a Bachelor of Arts in all major programs or a Bachelor of Science degree which is offered in most major programs. For either degree, the student is initially admitted to the College in one of two broad areas of study: social sciences-humanities, or sciences-mathematics.

In all majors, students may choose between a four-year full-time program and the five-year Cooperative Plan which offers opportunities for gainful employment or experiential assignments. Students who choose the Cooperative Plan are normally eligible to participate when they achieve sophomore status or above.

The Freshman Program

The freshman-year program consists of three quarters of course work with the selection of courses in five or six different subjects, depending on a student's intended major. Normally, a student takes four courses in each quarter, a total of twelve for the year. In most majors, freshmen are required to take two quarters of English writing, one quarter of college-level mathematics, and two quarters from each of the wide-ranging divisions of the curriculum (Humanities, Natural Sciences, Social Sciences). Students are provided guidance by a faculty adviser in the selection of courses and are encouraged to consult their faculty adviser early in the freshman year.

The Upper-Class Years

As in the freshman year, upper-class students receive faculty guidance in selecting courses and in choosing a major field of specialization. After the latter decision is made, upper-class students are identified with their department, its faculty, and other students in the same major field.

Graduation Requirements

Quantitative Candidates for either the Bachelor of Arts or Bachelor of Science degree, who entered in or after the fall quarter of 1974, must successfully complete 176 quarter hours of credit, of which thirty-two quarter hours may be taken outside the College of Arts and Sciences.

Residency Candidates must complete either 75 percent of the degree credit at Northeastern, or the last three full quarters (a minimum of 12 full courses) at Northeastern.

Qualitative Candidates must achieve a minimum cumulative average of 2.0 (grade of C).

Freshman English All degree candidates must complete one quarter of Freshman Composition and one quarter of Introduction to Literature. Normally, this will be done by completing courses 30.113 and 30.114 at Northeastern.

Major Candidates must complete successfully the courses specified as major requirements. These required courses, published in the *Basic Day College Course Descriptions and Curriculum Guide*, are indicated in major department overviews which follow.

Distribution

All course work offered in the College of Arts and Sciences curricula is identified within one of three broad areas: humanities, social sciences, and science-mathematics. All Bachelor of Arts candidates (and Bachelor of Science candidates in English and Speech Communications) must complete forty quarter hours in the two areas outside of the major. For example, a major in History, which is considered a social science, must complete forty quarter hours of course work in the humanities and science-mathematics areas. The course work for distribution must contain a minimum of sixteen quarter hours in one area and twenty-four quarter hours in the other area of the curriculum. A major in history, for example, satisfies the requirement by completing course work in one of the following ways: sixteen quarter hours in humanities and twenty-four quarter hours in mathematics and/or science; or twenty-four quarter hours in humanities and sixteen quarter hours in mathematics and/or science; or twenty quarter hours in mathematics and/or science and twenty quarter hours in humanities. The Departments are listed here with the appropriate curriculum area headings:

Humanities Art, Drama, English (all offerings beyond the freshman level); Modern Languages (all offerings except elementary levels); and Music, Philosophy, Journalism, Speech, and certain African-American Studies courses.

Social Sciences African-American Studies, Anthropology, Economics, History, Human Services, Political Science, Psychology, and Sociology.

Science-Mathematics Biology, Chemistry, Mathematics, Earth Sciences, and Physics.

To determine which distribution requirement a course meets, if selected from the interdisciplinary programs in Human Services or African-American Studies, students are advised to consult an academic adviser in the Dean's office.

Foreign Language All candidates for the Bachelor of Arts degree (and candidates for the Bachelor of Science degree in Biology) must attain a level of proficiency in a modern foreign language indicated by passing grades in intermediate-level college courses or by meeting a comparable criterion which has been approved by the Modern Languages Department. This requirement will be regarded as satisfied for students who earned an average grade of C or better in a full, four-year language sequence in secondary school; those who earned an average grade of A in a three-year language sequence in secondary school; and students for whom English is a foreign language. Other students may satisfy the requirement by passing a proficiency examination.

For students who have not met the foreign language requirement at the time of entrance, the entry level into foreign language study depends upon the scope and level of prior study. The normal sequence for students with no prior preparation is two quarters of elementary-level language and two quarters of intermediate level language. For students with partial language preparation, the appropriate entry point to begin completing the requirement will be determined by the Modern Languages Department.

Graduation with Honors

Candidates who have completed all degree requirements and have attained superior grades in their academic work will be graduated with honor (3.00 to 3.499 cumulative average); high honor (3.50 to 3.749 cumulative average); or highest honor (3.75 to 4.00 cumulative average). Transfer students who have completed all degree requirements and at least six full quarters of course work in the College of Arts and Sciences, at an honors level as defined above, may graduate with honors. The course work completed at other institutions, however, when weighed and averaged in with Northeastern University's work, must equal the University's honors level. The level of honors designated on the Northeastern diploma and transcript shall be no higher than the honors level attained as a Northeastern student.

Commencement Exercises

The College of Arts and Sciences holds commencement exercises each June and September.

Accreditation

All programs in the College of Arts and Sciences are fully accredited by the New England Association of Colleges and Secondary Schools.

Special Programs

Freshman Honors Each year, upon admission to the University, a small number of carefully chosen freshmen are invited to participate in the Freshman Honors program. Selection is based on a student's academic promise as reflected in past achievement, strong recommendations from secondary schools, and high scores on College Entrance Examination Board tests.

Participation in the Freshman Honors program is more than a mark of recognition. It allows flexibility in planning a course of study and permits the election of courses otherwise unavailable to freshmen. For example, Honors freshmen meet the freshman English requirement with Honors English, a two-quarter program designed to encourage creative writing and literary analysis. They may also participate in one of several honors colloquia offered each year. The colloquia are seminars on topics that change annually, and range from the study of American Colonial History to investigations into Special Relativity. Enrollment is strictly limited to provide the best atmosphere for the exchange of ideas and closer contact with faculty and students.

At the end of either the freshman or sophomore year, students with a sufficiently high average are notified of their eligibility to join the Honors program whether or not they were Honors freshmen. Sophomores and middlers who join are then free to enroll in a colloquium of their choice.

Junior-Senior Honors Juniors and seniors with a cumulative average of 3.5, no "I's" or "F's," and no grade of C or below in their major field are invited to do honors work during two or three of their last four quarters, affording them the opportunity to develop their special talents and interests. Honors work usually takes the form of special research leading to a thesis or presentation, under the sponsorship and supervision of a faculty adviser, with a proposal being submitted to the Honors Committee for approval before work on the project can begin.

Students who successfully complete two or three quarters of honors work are awarded departmental honors at graduation.

Further information is available at the office of the Dean.

Independent Major After their second quarter, students may petition the Dean of the College to meet the requirements of the Bachelor of Arts degree as an Independent rather than a departmental major. The Independent major must center on a discipline or combination of disciplines in the arts and/or sciences.

A faculty member, who will act as the student's academic adviser, initially reviews the program which must meet all College requirements. The program is then submitted to the appropriate committee for final approval. Requirements and procedures for the major should be discussed in advance with an academic adviser in the Dean's office.

Minors Students with upper-class status are eligible to select a minor from the arts and sciences departments which offer them. Upon completion of a department's minor requirements, the minor will be indicated on the transcript. Since not all departments offer minor programs, students interested in beginning a minor program should consult an academic adviser in the Dean's office or the department chairperson.

Combined Program With Professional Schools Students who have completed at least three-fourths of the course work required for a baccalaureate degree in the College of Arts and Sciences, and are accepted into an approved professional school of dentistry, law, medicine, optometry, osteopathy, or veterinary medicine will be eligible for the Bachelor of Arts or Bachelor of Science degrees at the end of the second year in professional school. At least two-thirds of work for the baccalaureate degree must be earned in residence at Northeastern, and all other College of Arts and Sciences requirements must be fulfilled, the residence requirement having been completed prior to entrance into the professional school. Under this program, a preprofessional student may reduce by one year the time normally required for obtaining both the undergraduate and professional degrees.

Services

Preprofessional Advising For students preparing for a career in medicine or related professional medical fields, the College of Arts and Sciences offers opportunities to discuss minimum requirements for admission with a faculty member designated as the pre-medical adviser. The Department of Graduate Placement Services (132 United Realty Building) also provides information and advice on procedures for admission, preparation of applications, and the scheduling of Medical College Admissions, Dental Aptitude, and other tests, which are usually to be taken well in advance of the anticipated admission date. For students preparing for a career in law, the Department of Graduate Placement Services provides information and advice on general curricular requirements for admission to law schools, procedures for admission, preparation of applications, and scheduling of the Law School Admissions Tests.

Graduate School Advising The Northeastern Graduate School of Arts and Sciences and the Department of Graduate Placement Services offers information and advice on graduate school admissions procedures, preparation of applications, and the scheduling of examinations required for postgraduate programs.

African-American Studies Department

Holly M. Carter, Ph.D., *Assistant Professor and Acting Chairperson*

Associate Professors

Joseph D. Warren, M.A.

Virgil A. Wood, Ph.D.

Instructor

Daniel O. Nyangani, M.A.

Assistant Professors

Carolyn W. Arnold, Ph.D.

Robert C. Hayden (Visiting) M.Ed.



Professional Preparation

Aims The Department of African-American Studies at Northeastern University offers an interdisciplinary study of the black experience with two central purposes: 1) to provide academically rigorous and exciting courses for all students interested in the field, and 2) to contribute to the students' ability to develop research and analytical skills and to apply this learning, whatever their discipline or career objective.

By presenting fresh perspectives while remaining firmly grounded in traditional academic standards, the courses in the Department of African-American Studies aid the student in developing the skill of critical thinking. In addition, the curriculum is designed to present the opportunity for the student to attain a facility with language. Both of these skills, sound thinking and effective use of language, are symbols of a meaningful liberal arts education and form a strong basis for professional or graduate work.

Description of the Major A major in African-American studies provides preparation for a wide range of professions including education, law, medicine, and business.

Students majoring in the department may select an area of concentration from seven subject areas and work under the supervision of a faculty adviser.

Students from other disciplines should find that the courses in African-American Studies are designed to complement and enrich their chosen concentrations.

A View of the Major Courses in the department are organized under seven major subject areas: Applied Science, Economics, Education, History, Humanities, Political Science, and Sociology/Psychology. Courses taken in the department may be credited toward degree requirements for all liberal arts students.

African-American Studies majors may study for either the Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) degree. All majors are required to take the following subjects:

- 25.170 Economic Issues in Minority Communities
- 25.195 Directed Study for Senior Thesis
- 25.194 Field Research Seminar for Seniors
- 25.201 African-American Literature I
- 25.210 Contemporary Issues in Black Society
- 25.212 The Black Family
- 25.237 African-American History I
- 25.191 Research Seminar
- 25.255 Public Policy Analysis
- 25.269 Race Relations in America

Faculty advisers work with students to help them select electives within their chosen area of concentration to fulfill their distribution and language requirements for the degree of Bachelor of Arts, or career package programs for the degree of Bachelor of Science.

Description of the Minor In an effort to meet the educational and career needs of students who are majoring in other areas, but have special interests in African-American studies, the Department is currently preparing a minor in African-American Studies. The program will consist of a core of three courses, as well as a broad range of electives and minor concentration clusters to accommodate individual needs. To qualify for a minor in African-American Studies, a student must successfully complete twenty-eight quarter hours in the field, as indicated below:

Required Courses

- 25.200 African-American Studies
- 25.191 Research Seminar
- 25.269 Race Relations in America

Elective/Concentration Clusters

Any four courses in African-American Studies of an advanced nature to be selected by the student and department adviser, in conformance with the student's education and career needs: i.e., a student interested in health careers may select a list of minor electives which would include Black Scientific Development, Community Medicine and Health Care, the Epidemiology of Black Diseases, and Poverty and Health Care.



Art Department

Robert L. Wells, M.A., *Professor and Chairman*

Associate Professors

Samuel Bishop, M.A., M.F.A.

Ronald Davis, M.Ed.

Wheaton Holden, Ph.D.

Peter Serenyi, Ph.D.

Lecturers

Joyce Bezdek, M.F.A.

Stephen Elston, M.A.

Professional Preparation

Aims The Art Department aims to introduce all interested students to the various forms and styles of expression in the visual arts and offers a major in Art.

Description of Major

Courses cover the evolution of architecture, sculpture, painting, graphic arts, photography, and film art with emphasis on styles, techniques, and cultural implications—some from prehistoric times to the present. Studio courses are also offered in areas of painting, drawing, graphic arts, photography, filmmaking, and animation filmmaking. Students will obtain a working knowledge of the structure of art, as well as preparation for graduate school.

A View of the Major

For students interested in Art, members of the Department offer individual guidance in the selection of courses best suited to individual goals.

Art majors are required to include the two-part course in the History of Art, and twelve Art courses; one elective each in Philosophy and Music; and two courses in History.

Candidates for the Bachelor of Arts degree must also show proficiency in a foreign language through the collegiate intermediate level, or must take courses to reach that level. The Bachelor of Science program, which does not include a modern foreign language requirement, offers more concentration in the major area.

Biology Department

Henry O. Wernitz, Ph.D., *Associate Professor and Chairman*

Professors

Francis D. Crisley, Ph.D.
Janis Z. Gablicks, Ph.D.
Charles Gainor, Ph.D.
M. Patricia Morse, Ph.D.
Nathan W. Riser, Ph.D.
Fred A. Rosenberg, Ph.D.
Ernest Ruber, Ph.D.

Assistant Professors

Joseph L. Ayers, Jr., Ph.D.
Kostia Bergman, Ph.D.
William C. Hartner, Ph.D.
Gwilym S. Jones, Ph.D.
Duncan R. Munro, Ph.D.
Daniel C. Scheirer, Ph.D.

Associate Professors

Charles H. Ellis, Ph.D.
Helen Lambert, Ph.D.
Charles A. Meszoely, Ph.D.
Joseph V. Pearincott, Ph.D.
Phyllis R. Strauss, Ph.D.

Professional Preparation

Aims The Biology major offers students a fundamental understanding of the organization and the processes of life, from the level of molecules and cells through the level of organs and organ systems to the level of populations, species, ecosystems, and evolution. The major also provides the mathematical, chemical, and physical background necessary to understand biology. Further, it trains students in practical scientific skills associated with each of these areas of study. Finally, it allows students to begin to specialize in a subdiscipline of biology.

Description of Major The major consists of ten biology courses in addition to those required in chemistry, physics, and mathematics. Six of the biology courses constitute a required core sequence: General Biology, Animal Biology, Plant Biology, Environmental and Population Biology, Genetics and Developmental Biology, and Cell Physiology and Biochemistry. A student normally should take the core before taking a required minimum of four upperclass biology electives. It is usually possible to follow the prescribed sequence if a student has decided on the major in the freshman or sophomore year. For students who may enter the major in the middler year, it is often possible to complete the major in the normal time by taking some of the electives concurrently with core requirements, provided they have previously taken freshman-level science and mathematics.

To graduate with a major in Biology, a student must have a cumulative Quality Point Average (QPA) of 2.0 for all science and mathematics courses required for the major. There are two programs within the Biology major, one leading to the Bachelor of Arts degree and the other to the Bachelor of Science degree. The B.A. program retains the College's requirements in humanities and social sciences; the B.S. program is more rigorous and more extensive in its mathematics and science requirements and thus provides better preparation for post-graduate study. The difference is mainly one of emphasis, however, and it is possible for a student to meet both sets of requirements.



After completing the core program, students interested in independent research may arrange with individual faculty to undertake Directed Study; if eligible, they may be invited to undertake a more extensive Honors Program involving up to four quarters of research.

The Department publishes a booklet, *The Biology Undergraduate Advisory Handbook*, which explains the required and recommended courses and the QPA standards in science for Biology majors. The *Handbook* is available in the Biology Office, Room 403, Richards Hall. Students intending to major in Biology should obtain a copy as early as possible in their enrollment at Northeastern.

A View of the Major The Biology major is excellent preparation for a wide variety of careers or professions in the life sciences, including medical, dental, and other health-related professions. Graduate study leading to a master's degree or doctorate can open careers in upper-level teaching and/or research in one of the specialized areas of biology, such as zoology, botany, microbiology, physiology, ecology, marine biology, cell biology or biochemistry. Biology majors may also go into post-graduate training in such health-related areas as nutrition, public health, or medical technology.

Biology majors not wishing to enter either professional or graduate schools may find employment on technical levels in federal, state, industrial, hospital or university laboratories doing research, survey, or quality control in a biological area. They may enter directly into positions in industries involved in the manufacture and distribution of pharmaceuticals, biological products, food, or scientific equipment. Many biologists are employed at all levels in fisheries, forestry services, county agencies, museums, aquariums, research vessels, and marine stations.

Preprofessional students (for example, premedical or predental) are urged to consult with the preprofessional advisory committee early in their careers at Northeastern. *Students are cautioned that the successful completion of the required preprofessional courses by no means ensures admission to a professional school since the number of applicants usually far exceeds the space available.*

Laboratories

The Biology Department has specially equipped teaching laboratories for general biology, botany, anatomy, microbiology, microscopy, physiology, zoology, and cell biology. Equipment for field work, museum specimens, models, charts, and closed circuit television are employed in laboratory instruction. Additional facilities include aquarium and animal rooms, stockrooms, preparation rooms, research areas, and a large suburban greenhouse and woodlot. The Department has close association with the University's Marine Science Institute at Nahant and with the University's Electron Microscopy Center.

Chemistry Department

Phillip W. Lequesne, Ph.D., *Professor and Acting Chairman*

John L. Roebber, Ph.D., *Associate Professor and Executive Officer*

Professors

Bill C. Giessen, Dr.Sc.Nat.

Barry L. Karger, Ph.D.

John L. Neumeyer, Ph.D.

Robert F. Raffauf, Ph.D.

Robert A. Shepard, Ph.D.

Alfred Viola, Ph.D.

Karl Weiss, Ph.D.

Associate Professors

Geoffrey Davies, Ph.D.

Arthur M. Halpern, Ph.D.

David M. Howell, Ph.D.

Conrad M. Jankowski, Ph.D.

Elmer E. Jones, Ph.D.

William M. Reiff, Ph.D.

Efthalia J. Spinos, M.S.

Robert N. Wiener, Ph.D.

Assistant Professors

Thomas R. Copeland, Ph.D.

David A. Forsyth, Ph.D.

Kay D. Onan, Ph.D.

David E. Seitz, Ph.D.

Judith M. Sparrow, M.S.

Instructor

James F. Hall, Jr., M.S.

Supervisor of Laboratories

Bernard J. Lemire, B.S.



Professional Preparation

Aims The educational objectives of the Chemistry Department are to give students the opportunity to: 1) experience the intellectual stimulation of studying a physical science; 2) grasp the basic principles and techniques which are central to a variety of chemistry-related careers, and 3) prepare for graduate study in chemistry or related fields. These objectives are implemented by the Department's highly research-oriented faculty, which consists of experts in various fields of the science.

Description of Major Chemistry is concerned with the structure and properties of substances, and with the transformations they undergo. The boundaries between the classical areas of analytical, inorganic, organic, and physical chemistry are no longer distinct. Moreover, significant overlaps have developed between chemistry and the fields of biology, physics, mathematics, medicine, and engineering. These trends are reflected in the Chemistry major programs at Northeastern.

Modern chemistry is the cornerstone for a large number of professions and industries. Challenging career opportunities exist in almost all technical fields in which functions such as research, development, production, sales, market analysis, quality control, and management are involved. The Chemistry major programs provide excellent preparation for the study of medicine, dentistry, and for advanced study in many fields of science. For students who choose to participate in the Cooperative Plan of Education, there are additional professional benefits. The practical experience gained on a job places chemistry in a more realistic perspective than does academic training alone, and may lead to better employment prospects upon graduation.

The Department publishes an informational booklet, *Chemistry at Northeastern*, which describes the Chemistry major curriculum and requirements in detail. Interested students may obtain a copy of this booklet in the Chemistry Department office, Room 102 Hurtig Hall.

A View of the Major The Department offers two major programs which lead to the B.S and B.A. degree, respectively. Both are normally based on the five-year cooperative study plan, but academically equivalent four-year study options are also available. The two degree curricula differ mainly in their liberal arts content and advanced science course requirements. Departmental advisers are ready to provide assistance and counseling to all chemistry majors in relation to course selections and other professional matters.

The Chemistry major programs at Northeastern are based on a novel, career-oriented concept. The basic core of courses in chemistry, mathematics, and physics may be supplemented with selected courses in other areas. Thus, the program offers the student an opportunity to prepare for any one of a wide variety of careers. Our alumni have pursued careers in many areas, such as:

- Technical Employment in Industry
- Chemical Sales and Management
- Teaching and Research via Graduate Study
- Clinical Chemistry, Medicinal Chemistry, and Pharmaceutical Chemistry
- Geochemistry, Mineralogy, and Environmental Chemistry
- The Health Professions (Medicine, Dentistry)
- Forensic Chemistry

The departmental advisers suggest various course options for students interested in preparing for any of the above careers. The variety of careers open to persons with a strong background in chemistry is extensive, and other options can be constructed from the large number of courses offered at the University.

The core curriculum is common to all options. It consists of courses in English, calculus, physics and basic chemistry, which are taken in the freshman year. Students may be exempt from the General Chemistry courses by passing equivalency tests; in this case other courses are substituted. In the upper years, courses in Organic, Inorganic, Physical, and Analytical Chemistry are taken. For the B.S. degree, some additional advanced mathematics and science courses are required. German or Russian is strongly recommended for students who plan to pursue graduate study in the sciences.

Qualified students are encouraged to undertake a research project under the supervision of a faculty member. An honors program is open to especially able students.

Chemistry Minor A minor program in Chemistry is available for students majoring in other fields. It consists of courses in general, analytical, organic, and physical chemistry. Further information may be obtained from the Chemistry Department Office, Room 102 Hurtig Hall.

Accreditation

The Chemistry programs at Northeastern are approved by the American Chemical Society. The B.S. degree meets the society's requirements for certification, which means that a certified graduate is eligible for Full Membership in the A.C.S. after two years experience.

Facilities and Research

The main facilities of the Chemistry Department are housed in Hurtig Hall, a modern, air-conditioned, five-story building which contains equipment for up-to-date teaching and research. All faculty offices are located there, as is the James Flack Norris Room, which serves as a lounge for undergraduate chemistry majors. Additional research facilities are located in the Forsyth Building (Photochemistry and Spectroscopy Laboratory), and in the Institute of Chemical Analysis, Applications, and Forensic Science. The Department's major research equipment includes electron microscopes, a mass spectrometer, lasers, X-ray diffractometers, nuclear magnetic resonance and electron spin resonance spectrometers, Gouy and Faraday magnetic balances, photoelectron and electron impact instrumentation, Mossbauer spectrometers, and a variety of ultraviolet and infrared spectrometers. Undergraduate students taking advanced courses or working on research projects may utilize certain of these instruments.

Active research programs are under way in synthetic and mechanistic organic chemistry, natural products chemistry, inorganic chemistry, chemical oceanography, photochemistry and spectroscopy, analytical chemistry, separation science, and solid-state chemistry.

Drama and Speech Department

Eugene J. Blackman, M.A., *Professor and Chairman*

Professor

Mort S. Kaplan, M.A.

Associate Professors

Carl W. Eastman, M.A.

Jerrold A. Phillips, Ph.D.

Michael L. Woodnick, M.S.

Assistant Professors

Joan F. Drexelius, Ph.D.

John T. Marlier, Ph.D.

Patricia H. Sankus, M.S.

Richard Schreiber, M.F.A.

Technical Director

Russell Swift, B.F.A.



Drama

Professional Preparation

Aims Theatre, one of the most ancient of all art forms, is still a moving force in our society because it uniquely involves the spectator to a degree unmatched by most creative and communicative arts.

At Northeastern, students in drama are offered the opportunity to prepare for careers in educational and professional theatre, as well as to prepare for advanced study at a graduate institution.

Description of Major The undergraduate Drama major will be introduced to the total theatre experience, as well as its individual arts and crafts.

Theatre history, dramatic literature, playwriting, as well as acting, directing, technical production, scene design, lighting design, costume design, voice control, and stage movement are only some of the areas covered in classroom courses. Theory will be tested in the theatre laboratories—the stages and their shops. The Drama majors are encouraged to express individual creative and interpretive impulses in courses, laboratory classes and the working crews and casts of productions. Advanced students will be urged to demonstrate abilities in independently organized but faculty-supervised projects in acting, playwriting, criticism, directing, and design.

A View of the Major It is recommended that Drama majors take a Physical Education *skill* course during each of the quarters in residence. The following courses, when available, are recommended: Modern Dance, Ballet, Jazz Dance, Tumbling, Gymnastics, Judo, Boxing, Wrestling, Fencing, Weight Training, Physical Conditioning, Exercise and Physical Control, and/or Swimming.

It is also recommended that the Drama major have at least a basic familiarity with the other creative arts as well as the basic humanities. When practicable, the major should take course work in the following areas outside the major field of concentration: music, art, philosophy, American and English literature.

The difference between the B.A. degree and the B.S. degree is one of flexibility and concentration. The B.S. degree allows the substitution of specialized field courses for the usual College distribution and language requirements.

However, there are minimum requirements for both degrees, with sixty quarter hours to be taken in the major area. Thirty-two quarter hours are to be taken in: History of the Theatre I & II, Voice and Articulation, Speech for the Theatre, Stagecraft, Practicum in Play Production, Acting I, and Directing I. Twenty-eight quarter hours are to be taken in *any* of the advanced Drama and Speech courses offered, some of which are: Make-Up, Acting II, III, Directing II, Stage Movement, Theatre Management, and Directed Studies for advanced students.

The theatre represents the major public laboratory to the Drama major, a place where theory is put into practice. All majors are expected to work in production each quarter in residence and fulfill a variety of crew assignments in construction, painting, sound, lighting, sewing, and ticket selling, as well as crew assignments for the running of a show—wardrobe, makeup, props, scene shifting, ushering, and house managing. Whenever possible, majors are expected to serve as stage managers and assistant stage managers. Appearing in a production is not a substitute for crew work and, when reasonably possible, all those concentrating in a performance aspect should also participate in crew activities.

A few places are kept available in upper-class performance courses for freshmen.

Minor In Drama

Students majoring in other departments may choose a minor in Drama to complement their academic majors or to assist them to develop career goals by taking eight courses (thirty-two quarter hours). Closely supervised by a Drama faculty adviser, students may follow programs of study that offer a generalized or a specialized program. Specialized areas are in 1) performance; 2) technical theatre/design; and 3) drama literature and criticism.

Accreditation

Basic course work offered by this Department adheres to the suggested minimum requirements for a Drama degree as put forth by the American Theatre Association and enables the diligent student preparation to take the Graduate Placement Examination in Theatre.



Speech Communication

Professional Preparation

Aims In the Speech Communication Major, the Department seeks to stimulate the personal and professional growth of the student through a study of the principles and methods of communication.

Courses are designed to aid students in the understanding of the communication processes and the roles of communication in society. The Speech Communication program attempts to provide theoretical and experiential learning in increasing self-awareness and personal development.

More than 25 courses in such areas as persuasion, group discussion and conference techniques, interpersonal communication, mass media, broadcasting, communication theory, and public address are designed to meet the needs of students, whether majoring or minoring in Speech Communication or selecting courses for personal development to supplement professional training in other fields.

Description of Major To provide for the unique needs of students with specialized interests or professional goals, the Department offers Directed Study and Internship programs. Virtually every Speech Communication major completes one or more projects in each of these programs.

In Directed Study the student works closely with a selected faculty adviser while completing a student-selected research or performance project. Generally commensurate with the workload of a one-quarter course, Directed Study projects deal with such areas as surveying and interpreting communicative behavior, studies of the rhetoric of political campaigns, and the effects of the media on society.

The Internship program offers students the opportunity for professional development through field experiences designed to complement or implement their classroom training. Distinct from the Co-op Plan, the Internship program provides academic credit for unpaid, part-time, on-site activities during the student's academic quarters. Internships, carefully selected by the student and faculty advisers based on the student's goals, usually result in the student's placement in active roles in commercial broadcasting studios, advertising firms, and governmental agencies.

The objectives for the Speech Communication Major are three-fold:

1. To stimulate the student's personal growth and development in perception and self-expression through the study of historical, contemporary, and artistic aspects of speech, and to provide organized knowledge and critical insight;
2. To help to prepare the student for professions which require both a theoretical and technical knowledge of communication, such as education, the law, government service, public relations, advertising, social service, industrial communications, and the arts;
3. To help to prepare the student for advanced graduate study in communication and other professional fields.

Overview Students may receive either a B.A. or a B.S. through a concentration in Group and Public Communication or Personal Performance.

It is recommended that students interested in the Group and Public Communication concentration select elective courses that are appropriate to their area of interest in the Departments of Psychology, Sociology, Political Science, Philosophy, and English.

Students interested in the Personal Performance concentration should elect courses from the Departments of Drama, English, Education, and Philosophy.

Description of Minor Students majoring in such fields as Political Science, Business, Human or Social Sciences, Education, and others, by selecting appropriate courses, with the aid of a Speech Communication faculty adviser, may develop a minor which complements their academic major.

Basic theoretical competence and personal skills in the areas of intrapersonal, interpersonal, group, organizational and public communication is acquired by taking the following four core courses required of all minors: 29.119, Introduction to Communication Theory; 29.108, Business and Professional Speaking; 29.141, Interpersonal Relations I; and 29.117, Group Discussion.

Individual needs and specific goals may be satisfied by selecting three additional electives with the approval of the Speech Communication faculty. Recommended elective groupings have been developed for students concentrating in Management, Marketing, Elementary or Secondary Education, Human or Social Services, Political Science, Sociology, Psychology, and Journalism.

Earth Sciences Department

Richard S. Naylor, Ph.D., *Associate Professor and Chairman*

Associate Professors

Richard H. Bailey, Ph.D.

Bernard L. Gordon, M.S.

William A. Newman, Ph.D.

David L. Wilmarth, Ph.D.

Assistant Professors

George A. Planansky, M.S.

Peter Rosen, Ph.D.

Martin E. Ross, Ph.D.

Professional Preparation

Aims The Department of Earth Sciences offers a degree program in geology in the College of Arts and Sciences as an in-depth study of a major area of the earth sciences, as well as courses in geology, geography, oceanography, and astronomy, which are available to all students.

Description of Geology Major Geology is a broad-based science which deals with the study of the physical features, composition, history, and processes of the earth. The manufacture of an enormous number of products composed of metals and petroleum derivatives is the basis of the economy of our society. The understanding of the origins of these natural resources and of how to assure their continued supply is one of the major roles of today's geologists. Only a small portion of the earth has been studied in detail, leaving many unexplored frontiers for each new graduate in the field. The Department also offers a minor in Geology.

A View of the Major Since the study of geology also draws on information from the other physical sciences, students should complete basic courses in chemistry, physics, and mathematics along with Physical and Historical Geology during their first two years. After completing the introductory geology courses and one year of chemistry, every Geology major takes a three-course sequence—Descriptive Mineralogy, Optical Crystallography, and Optical Mineralogy. A knowledge of minerals is fundamental to geological understanding. In addition to the required introductory and mineralogy courses, the student chooses a minimum of six (for the B.A. degree) or eight (for the B.S. degree) additional geology courses. There are also electives required in the areas of the humanities and social sciences.

Each student is assigned to an adviser in the Department. The adviser assists the students in making appropriate course selections as their knowledge increases and special interests develop. Though not required, courses in petrology, structural geology, and paleontology are usually among the electives chosen by undergraduates.

During the junior and senior years, students may select undergraduate research as one of their elective courses. Under the supervision of a faculty member, a problem is selected, defined, and researched. These projects give the undergraduates the opportunity to go much more deeply into some aspect of geology that holds particular interest for them. Students who meet the college requirements for the honors program may also be invited to carry out an undergraduate research project.

Special Information

Field Trips Though much geology can be learned from textbooks and in the laboratory, a sound geological education must also include direct contact in the field. Whenever it is appropriate, field work, on an individual or group basis, will be part of individual courses.

Economics Department

Morris A. Horowitz, Ph.D., *Professor and Chairman*

Professors

Conrad P. Caligaris, Ph.D.
Ernest M. DeCicco, Ph.D.
Harold M. Goldstein, Ph.D.
Daryl Hellman, Ph.D.
Irwin L. Herrnstadt, Ph.D.
Sungwoo Kim, Ph.D.
Gustav Schachter, Ph.D.
Donald Shelby, Ph.D.

Associate Professor

Pawan K. Sawhney, Ph.D.

Assistant Professors

Philip Abbot, Ph.D.
Sharda Gupta, Ph.D.
Robert Hankin, Ph.D.
Y. Lal Mahajan, Ph.D.
Francis Mulvey, Ph.D.
Balbir Sihag, Ph.D.
Andrew Sum, M.A.

Instructors

Sandra Baum, M.A.
Francis Carney, M.A.
Solomon Kenea, M.A.
Bruce Kutnick, M.A.
Edward Meehan, M.A.
George Michelis, M.A.
James McKinsey, Jr., M.A.
Donna Olszewski, M.A.
Mohamed Abdul-Rahman, M.A.
Calvin Young, M.A.

Professional Preparation

Aims The aims of the economics program are to offer students the opportunity to obtain a better understanding of how our economy and other economies function; to prepare themselves for graduate study in economics; and to develop specialties which may qualify them to work as economists.

Description of Major Economics is the study of the ways in which scarce resources, including human resources, are deployed to satisfy the material wants of individuals and society. Economists analyze the factors which determine the success or failure of this process.

Macroeconomics, which is concerned with the economy overall, deals with such problems as inflation, unemployment, growth and instability, and government monetary, fiscal, and regulatory policies. Microeconomics is concerned with the economic behavior of individuals, households, firms, and industries. It assesses the economic effect of racism, sexism, pollution, and environmental damage; it analyzes the economic aspects of natural resources, poverty, health, income distribution, trade unions, and collective bargaining.

Graduates are employed by businesses in such activities as industrial relations, planning and forecasting, determining plant locations, and making financial studies. They may become expert in analyzing consumer demand and

developing and marketing new products. They may conduct research or teach, and/or provide specialized consulting services. Federal, state, local governments and trade unions are important sources of jobs for economists.

A graduate with an economics major, or a number of advanced courses, is not only better prepared for graduate programs in economics but may be better prepared, as well, for entry into schools of law and business.

A View of the Major There is considerable flexibility in the economics program to enable the student to concentrate in the areas of his/her own interest. A student expecting to major in the field should take the problem-oriented Principles of Economics in the freshman or sophomore year to discover the range of insights economics can offer in analyzing and solving a variety of problems. Upper-division courses apply theory to an in-depth study of a specific area of the field.

Other courses for the major include two quarters each of fundamentals of mathematics, economic statistics, and economic theory. In addition, the Department offers electives in all areas of economics, honors courses, reading courses, and a senior seminar.

The courses listed above are required for either the Bachelor of Arts or Bachelor of Science degree. However, the B.A. follows the liberal arts tradition in its distribution and language requirements; the Department of Economics requires other social science courses as well, plus six economics electives. The B.S. is a professional degree. In addition to social science electives, it requires ten economics electives and one course in quantitative methods.

The Department courses provide training in economic theory, money and banking, public finance, international trade, growth and development, industrial organization, comparative economic systems, economic history, environmental economics, economics of crime, urban problems, labor markets, collective bargaining, human resources, poverty and discrimination, and medical economics. In addition, tool courses, such as statistics, mathematical economics, econometrics, and quantitative methods are available. Other electives and readings courses permit a student to study an area in depth.

Description of Minor The Department also offers a minor consisting of four required courses and four electives which are selected in consultation with a faculty adviser.

English Department

Gordon E. Pruett, Ph.D.; *Associate Professor and Acting Chairman*

Professors

Robert J. Blanch, Ph.D.
Victor E. Howes, Ph.D.
Samuel F. Morse, Ph.D.
Kinley E. Roby, Ph.D.
Stanley Trachtenberg, Ph.D.
Arthur J. Weitzman, Ph.D.
Paul C. Wermuth, Ph.D.

Associate Professors

Samuel J. Bernstein, Ph.D.
Francis C. Blessington, Ph.D.
Irene Fairley, Ph.D.
George S. Fayen, Ph.D.
Gary Goshgarian, Ph.D.
Gerald R. Griffin, Ph.D.
M. X. Lesser, Ph.D.
James E. Nagel, Ph.D.
Jane A. Nelson, Ph.D.
Lloyd A. Skiffington, Ph.D.
Herbert L. Sussman, Ph.D.
Joseph E. Westlund, Ph.D.

Visiting Associate Professor

Daniel Golden, Ph.D.

Assistant Professors

E. Wallace Coyle, Ph.D.
Timothy R. Donovan, Ph.D.
Joseph Hurwitz, Ph.D.
Jeffrey P. Kaplan, Ph.D.
Ruth McDonald, Ph.D.
Stuart S. Peterfreund, Ph.D.
Guy Rotella, Ph.D.
Penelope Tzougros, Ph.D.

Instructors

Cheryl Abbott, M.A.
Ben Bennani, M.A.
Linda Feldmeier, M.A.
John Halberstadt, M.A.
Paul Kreuzer, M.A.
Lea Masiello, M.A.
Bruce MacDonald, M.A.
Sarah S. Smith, M.A.

Lecturer

Joseph B. DeRoche, M.F.A.

Professional Preparation

Aims The English Department curriculum is diverse in its aims and flexible in its design. For the general University community, the curriculum offers possibilities in creative and expository writing, linguistics; and American, English, and foreign literature. For the preprofessional student—in law, medicine, business, or engineering—it offers a broad intellectual and cultural frame for specialist concerns. For the minor in English, it offers the possibility of concentration in American or British literature, linguistics, or literary analysis to supplement the major concerns of other disciplines. For the major in English, it offers the opportunity to prepare for careers in teaching and research, advertising and publishing, radio and television—indeed, any field in which communication and judgment go hand-in-hand.

At a time when the price of imprecision in language is more than simple misunderstanding and the cost of changing values more than personal uncertainty, the study of literature provides "a momentary stay against confusion." It deals with the hard edge of being, an insight into the ways of men and women, at once clear and complex. In fact, the very structure of literature gives shape and meaning to the often formless experiences of life. And it does so with grace and force. To put it another way, literature "tells it like it is," not statistically, not abstractly, but with the details of fully realized people in accessible worlds, "imaginary gardens with real toads in them."

Description of Major There is flexibility enough in the curriculum requirements and its details to accommodate the pace and interest of a wide range of



students. After an initial introduction to the study of literature in survey courses, a student is reasonably free to choose from among required areas or figures, whether it is Chaucer or Pope and Swift, the Romantic poets, or the contemporary ones. Members of the Department are available throughout the year to help and advise students, but the critical choice rests essentially with the student. So, too, is the choice within areas. The American literature requirement, for example, may be met by successfully completing courses from among such recent offerings as Major American Novels, The New England Renaissance, American Realism, and American Romanticism. To this area, as to others, the Department regularly adds new courses and, hence, even more options.

A View of the Major The curriculum for major concentration in English represents about one-third of a student's work during his stay at Northeastern. Depending upon individual interests and the availability of courses, a student's major may include Shakespeare or Milton, Gothic Fiction or Science Fiction, the Writing of Poetry or the Writing of Fiction, Linguistics or Semantics, Images of Women in Literature or Literature and the Law. There are also opportunities for studies in language and literature, independent of formal course offerings. Student and instructor get together informally to pursue ideas of mutual and particular concern.

History Department

Raymond H. Robinson, Ph.D., *Professor and Chairman*

Professors

Philip N. Backstrom, Ph.D.
Donald M. Jacobs, Ph.D.

Associate Professors

Charmarie J. Blaisdell, Ph.D.
Ballard C. Campbell, Ph.D.
William M. Fowler, Jr., Ph.D.
Norbert L. Fullington, Ph.D.
John D. Post, Ph.D.
Stanley R. Stembridge, Ph.D.

Assistant Professors

Gerald H. Herman, M.A.
LaVerne J. Kuhnke, Ph.D.
Clay McShane, Ph.D.
Martin R. Ring, Ph.D.

Instructor

R. Wayne Anderson, Ph.D.

Lecturer

Robert H. Ketchum, Ph.D.

Professional Preparation

Aims History's concern with man in his diverse and complex past provides excellent opportunity for the development of greater understanding and appreciation of today's culture and civilization. Traditionally, history has been a major of great appeal to men and women desiring a broad base before they embark on careers in business, law, journalism, and government.

Other majors know that they want to work more directly in history. Some want to teach in public schools. They may elect education courses leading to certification by the state. (Those desiring jobs in private secondary schools need not be certified by state authorities.) Teaching positions in colleges and universities require master's, and increasingly, doctor's degrees. An undergraduate major in History facilitates entrance to graduate programs in the field. Ordinarily, college and university teachers of history spend part of their time in research and writing.

Not all professional historians teach and write. Many find pleasure and profit working in public archives, private historical societies, museums, and restoration projects. Their careers not only serve other professional historians but a larger public as well.

Description of Major For majors of such diverse interests and ambitions, curricula must combine sensible structure with flexibility. Majors in History at Northeastern may qualify for either a Bachelor of Arts or a Bachelor of Science degree. Since the B.A. requires a foreign language, it appeals to prospective candidates for graduate school where reading knowledge of foreign languages is necessary; the B.S. is designed for students desiring greater specialization in history and a social science orientation.

Candidates for both degrees are required to take the surveys in Western Civilization and American History, and The Historian's Craft, which focuses on methods, problems, and philosophies of historians. Beyond the basic courses are a wide range of offerings covering the political, economic, social, and cultural history of man in diverse times and places.

A View of the Major To assure a broad program of study, the College of Liberal Arts requires that students choose courses offered by departments outside the area of the major. At Northeastern University, history is classified as a social science; so History majors must complete forty quarter hours of work in the humanities and science/mathematics (see page 108). Sixty quarter hours of history are required for the B.A. degree; seventy-two quarter hours for the B.S. degree.

The history requirements are broken into groups: Group A (Ancient, Medieval, and Early Modern Europe); Group B (Modern Europe); Group C (British North American Colonies and the United States); and Group D (Other Areas or Regions). A minimum of two courses (eight quarter hours) must be elected from each group.

Majors are also urged to avoid overspecialization at the undergraduate level. Though there are no maximum limits on the amount of history that may be taken, the Department advises broad course selection as the best policy for its majors. All majors are assigned to departmental advisers who offer counsel about the program. Students are urged to seek advice about history electives, about other electives, and about the Honors program.

All qualified History majors are urged to consider the Honors Program in History. Those accepted write honors theses under the direction of members of the Department. Students ordinarily register for honors courses in their last three quarters of enrollment, except for the summer quarter when honors courses are not usually offered.

The Minor Students interested in a minor in history should consult the Department of History for information.

Human Services

An interdisciplinary major involving the

College of Education

College of Arts and Sciences

Advisers Education

Professor Susan E. Massenzio, Ph.D.

Professor Barbara Schram, Ed.D.

Professor Alvin D. Zalinger, M.A.

Arts and Sciences

Professor Wilfred Holton, Ph.D.

Professor Marlene MacLeish, Ed.D.

Coordinators

Professor Barbara Schram, Ed.D., *Coordinator*

Professor Wilfred Holton, Ph.D., *Associate Coordinator*

Professor Marlene MacLeish, Ed.D., *Associate Coordinator*

Professor Susan E. Massenzio, Ph.D., *Associate Coordinator*

Human Services

Aims This major offers students the opportunity to prepare themselves for possible careers in one of the areas broadly defined as "Human Services." The program is interdisciplinary. The Human Services curriculum allows students to obtain fundamental attitudes, knowledge, and skills which can lead to a meaningful career in the helping professions as well as to a graduate education in a variety of fields.

Students in the College of Arts and Sciences who major in Human Services may prepare themselves to perform a variety of functions in public and private agencies. Through course work, two quarters of field work experience, and

possible co-op jobs, students may have the opportunity to explore such fields as: casework services in social service and welfare agencies; therapeutic treatment programs in mental health settings; supportive counseling in community health centers; rehabilitation counseling services; sheltered workshops; parole counseling; court liaison in programs for delinquent youth; staff work in halfway houses, penal institutions, and drug treatment centers; supportive counseling for the mentally retarded; community organizing; services for the aging; administration in Human Services agencies; and social program research and evaluation.

Description of the Major The Human Services program offers a continuing advisory system to help students make the best use of their early course selections and to guide them to appropriate upper-level courses.

There are five basic aspects to the program as follows:

1. **College Requirements.** Degree requirements differ for each participating college. Refer to pages 107 to 108 for requirements in the College of Arts and Sciences; and to page 72 for requirements in the College of Education. Degree candidates in Human Services in Arts and Sciences are required to meet the modern language and distribution requirements of the College (see pages 107 and 108). Students in Arts and Sciences may take a five-year Cooperative Education Program or a four-year full-time program.
2. **Prerequisite Courses.** Courses in the areas of Economics, Human Services, Political Science, Psychology and Sociology are required.
3. **Core Courses.** Courses in the areas of Community Studies, Counseling and Casework, Group Process, Organizational Behavior, Rehabilitation and Social Welfare.
4. **Concentrations.** A group of four courses focused on a student's area of interest is selected in close cooperation with an adviser.
5. **Supervised Field Experience.** Human Services students are required to fulfill two fieldwork placements during the last two years of their program. Each placement consists of 150 hours on site. The type of placement varies according to the student's interest. Several examples of placements which have been employed are: community centers, nursing homes, vocational workshops, state and federal agencies for children, and recreational facilities. The experiences are supervised by University staff to maximize the student's learning opportunity.

A View of the Major Students have the opportunity to obtain useful values and basic knowledge relating to the Human Services fields. Courses introducing some basic skills can help them to understand and work with a variety of helping services.

Human Services students at Northeastern University have been very active in their major and helpful to each other. The Human Services Student Organization combines social and career-related activities, which in the past have included open houses, day-long conferences, and weekend retreats. A quarterly *Human Services Newsletter* is published by students and faculty.

Decision-making in the Human Services major occurs in an Advisory Committee with three student members, and in a Steering Committee composed of the Coordinators and Deans.

For specific details on degree requirements, a student should consult his/her Human Services adviser or a counselor in the office of the Dean of his/her college.

Journalism Department

George A. Speers, M.Ed., M.S. *Associate Professor and Chairman*

Assistant Professors

William Kirtz, M.S.

Patricia Hastings, Ph.D.

Instructors

Joseph Mahoney, J.D.

Daniel Pitts

David Richwine, A.B.

Robert B. Ruttenberg, A.B.



Professional Preparation

Aims In this modern world, it is evident that society relies increasingly on the mass media so citizens may keep abreast of rapidly changing conditions all around them. It is the role of the journalist to observe, understand, analyze, explain, report, and interpret, as well as to provide leadership in ideas and information through the mass media's many outlets.

Description of Major Many opportunities exist in the broad field of journalism. A Journalism major would be qualified for openings with daily and weekly newspapers, news departments of radio and television stations, news bureaus, wire services, general and specialized magazines, industrial journalism, public relations, publicity, and many other fields not directly related to mass media. A journalism education actually provides an excellent background for many nonmedia fields where the communications process is important.

A View of the Major A journalist should have a broad background of liberal arts courses on the undergraduate level, and most university journalism programs have long recognized this need. The student should have some background and professional courses, but not to the point of overspecialization.

The generally accepted formula in Journalism for the bachelor's degree is a combination of approximately 70 percent liberal arts courses and 30 percent professional courses. This combination is preferred by most graduate schools of journalism, as well as leaders in the field.

In the freshman year at Northeastern, all courses are in the liberal arts. In each of the upper-class years the ideal arrangement is to take one journalism course each quarter, and in some quarters two Journalism courses, with additional course work in the humanities, social sciences, sciences, and mathematics.

Because journalism skills can be better expanded and understood with the aid of a laboratory, upper-class Journalism majors are encouraged to participate in the Cooperative Plan of Education. Co-op jobs with newspapers, radio and television stations, news bureaus, and public relations offices provide a laboratory experience. This is quite important to one who wishes to be part of the world of communications. In addition, such experience gives a student a major advantage if he or she decides to seek admission to a graduate program in journalism.

Journalism majors enrolled in the B.A. program will take eight quarter hours in each of the following: U.S. History, other history electives, English literature, English electives, political science, and economics. General electives of approximately forty quarter hours or ten courses are also required. (See page 108 for distribution and foreign language requirements.) Thirty-two quarter hours are required in the Fundamentals of Newswriting, Techniques of Journalism, History of the Principles of Journalism, and Press and Society.

Students selecting the B.S. program will also take the aforementioned courses but must include twenty-four quarter hours in mathematics, physics, biology, or other science courses. In this case, there is no foreign language requirement.

Mathematics Department

Maurice E. Gilmore, Ph.D., *Professor and Chairman*

Professors

Bohumil Cenk, Sc.D.
David I. Epstein, Ph.D.
Holland C. Filgo, Ph.D.
Alberto P. Galmarino, Ph.D.
Arshag B. Hajian, Ph.D.
Nancy Kopell, Ph.D.
Richard A. Rasala, Ph.D.
Gabriel Stolzenberg, Ph.D.
Harold L. Stubbs, Ph.D.

*Robert G. Stone Professor
of Mathematics*
Jack Warga, Ph.D.

Associate Professors

Shirley A. Blackett, M.Ed.
Samuel J. Blank, Ph.D.
Mark Bridger, Ph.D.
Bruce Claflin, M.S.
Ellen H. Dunlap, B.A.
Harriet Fell, Ph.D.

John Frampton, Ph.D.
Samuel M. Giveen, M.A.
Eugene Gover, Ph.D.
Nishan Krikorian, Ph.D.
Mark Ramras, Ph.D.
Betty Salzberg, Ph.D.
Jayant Shah, Ph.D.
Thomas O. Sherman, Ph.D.
Victor R. Staknis, Ph.D.

Assistant Professors

Gail A. Carpenter, Ph.D.
John Casey, B.A.
Agnes H. Chan, Ph.D.
Daniel I. A. Cohen, Ph.D.
Martin H. Ellis, Ph.D.
Samuel Gutmann, Ph.D.
Anthony Iarrobino, Ph.D.
Michael Perloff, Ph.D.
Richard D. Porter, Ph.D.
Viera K. Proulx, Ph.D.

Professional Preparation

Aims The Department aims to develop and expand the abilities of students interested in this exact science, one of the oldest and most basic of all the sciences.

Description of Major The Department offers two programs of studies in mathematics. One leads to a degree of Bachelor of Arts and requires a minimum of thirteen mathematics courses. The foreign languages recommended are French, German, Italian, or Russian since there is more writing related to mathematics in these languages than in the others offered. The other program leads to a degree of Bachelor of Science and requires a minimum of sixteen mathematics courses but does not require the study of a foreign language. Bachelor of Science degree candidates may opt to pursue a degree in Mathematics with concentration in Computer Science, provided they take a number of selected computer courses among their required fourteen mathematics courses.

A View of the Major All students must take a basic sequence of mathematics courses, and as a rule, it should be completed by the end of the sophomore year. It provides a working knowledge of the calculus of one and several variables, differential equations, some linear algebra, and numerical methods. With respect to the latter, while a computer programming course is not required, students will be encouraged, and eventually, expected to acquire the basic programming skills necessary for numerical solution of complex problems. An ele-

mentary programming course is available for this purpose. Mathematical computer science courses are offered for interested first and second-year students. The computer science track in the Mathematics major is described in the Basic Day Colleges course descriptions and curriculum guide.

Directed Study

For highly motivated students, a freshman-sophomore directed study program (beginning in the winter of the freshman year) runs concurrently with the calculus sequence and provides an informal setting for independent research and intensive discussion of mathematical concepts and theories. Students interested in such a program should consult their calculus or computer science instructor.

Courses of directed study are also available for more advanced students. A transition from the basic sequence to more advanced parts of the curriculum is provided by Analysis I-II and Advanced Linear Algebra I. These courses are prerequisites for many advanced courses in applied analysis, complex analysis, topology, and foundations. In computer science the courses in computer organization and information structures are the link to more advanced subjects.

As a rule, students planning to take a substantial number of mathematics courses (e.g., two per quarter) should take these courses in the middler year. Students may wish to take a prerequisite for more advanced courses in algebra or one which includes linear, nonlinear, and dynamic programming, or both.

Courses in probability, statistics and numerical analysis may also be taken directly after the basic sequence.

Courses in computer science range from freshman to graduate level, including group projects and individual projects directed by faculty. Here, possible specializations include artificial intelligence, computer networks, combinatorics, graph theory, and software development.

In the fourth and fifth years, students who have completed Analysis I-II and Advanced Linear Algebra I will have a variety of mathematics electives from which to choose. Some will wish to concentrate in one area such as algebra, analysis, topology, computer science, or applied mathematics, while others may prefer a more diversified program. Many of the upper-level courses, such as probability and complex analysis, reside in the common ground of "pure" and "applied" mathematics. Others, such as algebra and numerical analysis, are more specialized.

Students may wish to work out with their adviser a program of directed study and/or take first- and second-year graduate courses and seminars.

Computer Science Minor

For students who major in other areas but are interested in learning about computers and computer programming, the Department offers a minor in Computer Science. The program contains four basic courses and a wide range of electives to accommodate individual needs.

To qualify for a minor in Computer Science, a student must take twenty-eight quarter hours of the courses described below.

Basic Course Requirements

Required courses

Introduction to Computers and Computing, Introduction to Computer Science I, Computer Organization and Programming, Information Structures.

Electives

Any three courses of advanced nature given by the Mathematics Department, i.e. any course numbered over 10.140. Some other computer related courses may also be approved as electives.

Modern Languages Department

Holbrook C. Robinson, Ph.D., *Assistant Professor and Chairman*

Israel Aluf, Ph.D., *Associate Professor and Executive Officer*

Professor

Samuel Jaramillo, Ph.D.

Associate Professors

Nazzareno F. Cedrone, Ph.D.

Benedetto Fabrizi, D.M.L.

Juliette M. Gilman, Ph.D.

Charles E. Kitchin, M.A.

Bonnie S. McSorley, Ph.D.

Constance H. Rose, Ph.D.

Philip H. Stephen, Ph.D.

Assistant Professors

Lillian Bulwa, Ph.D.

Walter Gershuny, Ph.D.

Robert B. Modee, M.A.

Stephen A. Sadow, Ph.D.

John Spiegel, M.A.

Mary-Anne Vetterling, Ph.D.

Professional Preparation

Aims The study of Modern Languages can be of value to all students, regardless of their major field of interest. In the complex and rapid pace of modern life, there is a need for increased communication between varied and often divergent cultures, even those within the narrow confines of one's own community. To better understand and appreciate these cultures, it is very important to know the way in which the members of the culture think.

As the principal means of communication, language frequently offers the key to understanding. Thus, language study may serve to help one achieve a more cosmopolitan, open-minded, and sensitive view of the world.

The Department offers opportunities for background preparation for students interested in elementary, secondary school, or college teaching, international business relations, government service, journalism, library science, world affairs, travel, and community service (especially in Spanish-speaking areas).

The major in Modern Languages requires advanced courses in two languages and is available in French, German, Italian, Russian, or Spanish. Those who wish to teach in college must plan on graduate study.

Description of Major The freshman year is normally considered a year for general background. It will establish the foundation upon which the major will be formed. It is a year which should be utilized to fulfill as many general requirements as possible so that during the upper-class years more time can be devoted to the major discipline.

Normally the study of the minor language would begin in the second year. However, in exceptional cases, this pattern may be altered to permit students to begin their second language in the freshman year, or perhaps, postpone it to a later year. The Modern Language major should plan to take at least two language electives per quarter from the beginning of the second year. Again, of course, this pattern may be varied to fit the needs of the individual student.

It should be noted that the requirements indicated here for the major and minor languages are *minimum* requirements. When at all possible, a student is strongly encouraged to go beyond them, and even, perhaps, to pursue a third language.

The Major The Department offers a choice of either a Bachelor of Arts or a Bachelor of Science degree. In each case, the student is offered a choice of French, German, Italian, Russian, or Spanish. One of these languages will be selected as the major language, with a second as the minor. Both degrees require Freshman English.

The B.A. is, of course, the traditional degree for this discipline. Candidates for the B.A. must satisfy the college distribution requirements for graduation and, in addition, must meet the departmental requirements in their major. These requirements are: eight quarter hours in Western Civilization; eight additional quarter hours in history (any other history courses relevant to the major are acceptable); eight quarter hours of Survey of English Literature; a minimum of thirty-two quarter hours of advanced work in the major language and eight quarter hours of advanced work in the minor language. Advanced work may be defined as any course beyond the intermediate level of the language.

The Bachelor of Science degree in Modern Languages differs from the B.A. primarily in its emphasis. Whereas the B.A. requires that the student satisfy the distribution requirements of the College of Arts and Sciences, the B.S. waives these requirements in favor of a much more concentrated program in the major area.

In addition, the candidate must complete eight quarter hours of Composition and Conversation in the major language, and eight quarter hours of Composition and Conversation in the minor language. Candidates then must complete forty additional quarter hours of advanced work in the major language and sixteen additional quarter credits of advanced work in the minor.

The Minor For the students interested in acquiring proficiency in one foreign language as an adjunct to their major, the Department offers a minor in Modern Languages. This program is open to students of all Colleges. The details of the requirements for a minor vary slightly from language to language, but, in all cases, the student is required to take a total of six courses. Generally, two composition and conversation courses, a civilization course, and an introduction to literature class are required. The remaining courses are free electives drawn from advanced courses offered by the Department.

Students are urged to consult the Department adviser for further information about the minor, as well as for details of new programs and procedures.

Additional Information In the basic language courses, attendance in the language laboratory is required for two half-hour sessions per week. The facilities of the language laboratory are also available on an optional basis for advanced work. The Department lounge is available to Modern Language students.

Philosophy and Religion Department

Stephen L. Nathanson, Ph.D., *Associate Professor and Chairman*

Professors

Walter L. Fogg, Ph.D.
Pavel Kovaly, Ph.D., C.Sc.

Assistant Professor

Bart K. Gruzalski, Ph.D.
Michael R. Lipton, Ph.D.
Susan M. Setta, Ph.D.

Associate Professors

William J. DeAngelis, Ph.D.
Edward A. Hacker, Ph.D.
Gordon E. Pruett, Ph.D.
Joseph H. Wellbank, Ph.D.

Professional Preparation

Aims Philosophy deals with a wide range of questions and issues which have been generated by various aspects of human experience, by the beliefs and theories people hold and by the practical problems human beings confront. Philosophy includes both questions and theories related to art, religion, morality, society, and natural and social sciences. Because of the breadth of its concerns, the study of philosophy provides a unique opportunity for students to examine and improve their beliefs in many areas through critical reflection.

Through readings, discussion, and writing, philosophy students can encounter and examine questions concerning the nature and validity of religious beliefs, moral judgments, and scientific theories, as well as questions of values and social policy in such areas as law, medicine, and technology. In all these areas, analysis of issues and evaluation of arguments provide an opportunity to understand diverse claims to knowledge and areas of controversy.

The program includes courses that strengthen the student's work in other areas and provide an understanding of the methods and traditions of philosophical and religious thought. A major in Philosophy can help a student both to acquire a broad background in the humanities and to sharpen his or her critical abilities in preparation for graduate or professional study in many areas. For students with major interest in another discipline, the Department offers a Minor program, which can be a valuable supplement to most fields. Indeed, former Philosophy majors can be found in most types of professional careers.

The program in Religion is an attempt to provide an understanding of religious experience, both as an individual response and within its social, historical, literary, and political context. Religions (Christian, Jewish, Hindu, etc.) are studied as well as the mythical and mystical dimensions of religious experience. The program strives to make clear the relationship between the religious experience and the other facets of human life which are the concern of both the liberal arts and the professions. Although a major is not offered in Religion, the program attempts to provide a basic introduction to religious studies. Both introductory and intermediate level courses are offered.

Description of Major Northeastern's program for a Philosophy major is designed to provide a balanced understanding of the nature of philosophy and particular philosophical problems which arise in the various arts and sciences. A maximum number of electives has been provided so that a student may choose in accordance with his own background and interests. Students may pursue either a five-year co-op or a four-year, full-time course of study.

Although the Departmental requirements for the B.A. degree are the same as those for the B.S., those students taking the B.A. must meet the language and distribution requirements set by the College. All degree candidates in Philosophy must take at least eight quarter hours in English and fifty-two quarter hours in the Department, and must meet the following specific requirements:

- A. Classical Greek Philosophy *and* Modern Philosophy;
- B. Introduction to Logic *OR* Symbolic Logic (the Department emphatically recommends that students contemplating graduate studies in Philosophy take Symbolic Logic);
- C. Theory of Knowledge *OR* Metaphysics *OR* Moral Philosophy; and
- D. at least one Seminar;
- E. The remaining thirty-two quarter hours are Philosophy electives, to be selected after consultation with the student's departmental adviser.

Description of Minor To attempt to meet the needs of students majoring in other areas who have a special interest in Philosophy, the Department offers a minor in Philosophy. The program contains the essential core of courses, as well as a great range of electives to accommodate individual interests.

Specific requirements:

- A. an Introduction to Philosophy course;
- B. either Classical Greek Philosophy *OR* Modern Philosophy;
- C. either Introductory Logic *OR* Symbolic Logic;
- D. either Moral Philosophy *OR* Theory of Knowledge *OR* Metaphysics *OR* Philosophy of Mind;
- E. Three electives in Philosophy to bring the total number of quarter hours in Philosophy to twenty-eight.

Physics Department

Roy Weinstein, Ph.D., *Professor and Chairman*

Professors

Ronald Aaron, Ph.D.
 Petros N. Argyres, Ph.D.
 Richard L. Arnowitz, Ph.D.
 Alan H. Cromer, Ph.D.
 Marvin H. Friedman, Ph.D.
 David A. Garelick, Ph.D.
 Marvin W. Gettner, Ph.D.
 Michael J. Glaubman, Ph.D.
 Hyman Goldberg, Ph.D.
 Bernard Gottschalk, Ph.D.
 Walter Hauser, Ph.D.
 Giovanni Lanza, Ph.D.
 Robert P. Lowndes, Ph.D.
 Bertram J. Malenka, Ph.D.
 Pran Nath, Ph.D.
 Edward Neighbor, Ph.D.
 Clive H. Perry, Ph.D.
 Eugene J. Saletan, Ph.D.
 Carl A. Shiffman, Ph.D.
 Yogendra N. Srivastava, Ph.D.

Michael T. Vaughn, Ph.D.
 Eberhard von Goeler, Ph.D.
 Fa Yueh Wu, Ph.D.

Associate Professors

Robert I. Boughton, Ph.D.
 William L. Faissler, Ph.D.
 Keh-Ying Lin, Ph.D.
 (Visiting)
 Laurence M. Schwartz, Ph.D.
 (Visiting)
 Jeffrey B. Sokoloff, Ph.D.
 Alan Widom, Ph.D.

Assistant Professors

Laszlo Baksay, Ph.D.
 Arun Bansil, Ph.D.
 Sung-Shang Chang, Ph.D.
 (Visiting)
 Fernando D. Medina, Ph.D.
 Giulia Pancheri-Srivastava, Ph.D.

Professional Preparation

Aims Physics is concerned with the fundamental principles which govern natural phenomena, ranging in scale from collisions of subatomic particles through the behavior of solids and liquids, to exploding stars and colliding galaxies. From these principles, we can also understand basic chemical and biological processes, as well as the operation of engines, solid-state electronic devices, lasers, and other tools of modern civilization.

The Physics Department offers undergraduate courses at four levels:

1. Descriptive courses intended primarily for nonscience majors with limited mathematical background;
2. General survey courses intended for students in scientific and engineering fields;
3. Advanced courses which focus on particular areas of physics; intended mainly, but not exclusively, for Physics majors.
4. Highly advanced courses intended mainly, but not exclusively, for graduate students in Physics.

Description of Major Students who major in Physics have the opportunity to prepare themselves for a wide variety of careers. In addition to work in industrial or government laboratories in areas of applied physics, there are opportunities in allied fields such as biophysics, geophysics, and various branches of engineering for students who have mastered the fundamental principles emphasized in a physics education.

A student majoring in Physics can follow either a four-year full-time program or a five-year co-op program. Many graduates have gone on to earn advanced degrees in physics and related fields.

A View of the Major Physics majors may study for either the Bachelor of Arts or Bachelor of Science degree.

Candidates for the B.A. are required to pass three lecture courses and three laboratory courses in physics, and one course in mathematics, beyond the basic survey courses in physics and mathematics of the first two years. The College requirements in English, modern language, humanities, and social science must also be satisfied. This program is extremely flexible and allows the B.A. physics major to pursue other interests in depth.

Candidates for the B.S. must pass seven lecture courses and three laboratory courses in physics, two advanced courses in mathematics and five technical electives (courses in science or engineering) beyond the basic physics and mathematics courses. The B.S. program is appropriate for those students who wish to pursue graduate study in Physics.

The first-year program of all Physics majors includes a three-quarter physics course common to all science and math majors, and a three-quarter mathematics course. The remaining two courses each quarter can be chosen from a wide range of electives. Two-quarter courses in physics and mathematics and a physics laboratory course in Electronics and Data Analysis are required in the second year.

The upper-class lecture courses offered by the Department include Mechanics, Wave Motion and Optics, Thermodynamics, Electromagnetic Theory, Quantum Theory, Mathematical Physics, Nuclear Physics, Solid State Physics and Astrophysics. The upper-class laboratories include Wave Motion, Modern Physics, and Advanced Laboratory. These courses are taught by active researchers in Physics who have a strong commitment to teaching, and the classes are generally small (10-15 students).

There are special lectures for students sponsored by the Society of Physics Students, and the Physics Club, and reading courses on special topics in physics of interest to particular students.

Students interested in majoring in Physics should consult with one of the advisers in the Department as early as possible in their college careers to plan programs.

Description of Minor The Physics Minor program is designed to accommodate a wide variety of interests while still providing a study of the fundamentals of the subject.

To fulfill the requirements of the minor a student must take three intermediate and/or advanced courses after completing Elementary Physics.

Honors Program and Undergraduate Research Students invited into the Honors Program may take graduate courses, reading courses, and special topics courses in the various research fields of the Department. Such work occasionally leads to presentation by the students of papers at professional meetings and to publication in journals.

Political Science Department

Robert E. Gilbert, Ph.D., *Associate Professor and Chairman*

Professors

Robert L. Cord, Ph.D.
David E. Schmitt, Ph.D.

Associate Professors

L. Gerald Bursey, Ph.D.
Minton F. Goldman, Ph.D.
Steve Worth, Ph.D.

Assistant Professors

Duane L. Grimes, M.A.
Edward M. Humberger, Ph.D.
Eileen L. McDonagh, Ph.D.
Suzanne Ogden, Ph.D.
Joseph Reed, M.A.
Stewart Reiser, Ph.D.
Roberta R. Rosenberg, Ph.D.
George G. Wolohojian, M.A.

Professional Preparation

Aims Political science is concerned with the study of political institutions, the social and economic forces which shape them, the cultural context within which they operate, and with human behavior in political matters.

The Department of Political Science at Northeastern University has three objectives: (1) to help the student obtain an education within the framework of the best liberal arts tradition; (2) to heighten a student's awareness of political forces in the environment, and to sharpen his or her perception of a student's role as a citizen in a democratic society; and (3) to provide the student with the opportunity to acquire a solid academic foundation for those who elect political science, law, or public administration as a professional career.

Description of Major The study of political science can be the gateway to a liberal education with its benefits of broadened interests, sharpened sensibilities, and a quickened sense of civic responsibility. If one has a special interest in politics, studies in this field can help the student prepare for governmental services, the study of law, the teaching of government and related subjects, or for a career in politics or public management.

For the student who wishes to pursue his/her professional studies at the graduate level, concentration in Political Science and Public Administration can help open up many attractive opportunities. As with many fields, competition for positions is keen, and the student's success will depend upon a number of factors such as their academic record, experience, and personal initiative. But there are some career opportunities in public management at the federal, state, or local government level while positions in research are available in government and university research bureaus. Teaching offers further career possibilities. The growth of specialized agencies in international bodies like the United Nations calls for the skills of the political scientist. Individuals with specialized training in political science can compete for positions in less obvious areas: in the public-service programming of educational and commercial television, in journalism, and in legislative study and public relations activities with private associations.

A View of the Major Students may select either the Bachelor of Arts or the Bachelor of Science degree program. If they select the B.A. program, they will have to meet the foreign language and distribution requirement of the College. If they select the B.S. program, they will be required to take courses in Quantitative Analytical Methods. However, either degree requires four quarter hours in each of the following: Introduction to Political Science, Introduction to American Government, Foreign Governments, International Relations, Public Administration, and Political Theory, twenty-four to twenty-eight quarter hours of electives in political science, six electives (twenty-four quarter hours) in the social

sciences, with at least one course in at least three of the following: African-American Studies, Anthropology, Economics, History, Psychology, or Sociology. The B.S. student is required to take eight hours of research methods. Courses in basic math and FORTRAN and FORGO are also recommended for B.S. students.

The Bachelor of Science program with a concentration in Public Administration provides a third option for the student. This program requires the completion of forty hours of such required courses as Introductory Political Science, American Government, Public Administration, Public Policy Analysis, Personnel Administration, Public Budgeting, and similar courses. Students must also complete at least sixteen quarter hours of Public Administration electives. Also, students may undertake a Directed Study project based on an internship experience in a government agency. In addition, they must complete twenty-four hours of electives in the social sciences, at least eight of which should be in economics.

Description of the Minor A minor in Political Science is also available to interested students.



Psychology Department

Marc P. Onigman, M.A., *Acting Chairman*

Professors

John C. Armington, Ph.D.
Harlan Lane, Ph.D., *Doc ès Lettres*
Helen S. Mahut, Ph.D.
Bertram Scharf, Ph.D.
Murray Sidman, Ph.D.
Michael Terman, Ph.D.
Harold S. Zamansky, Ph.D.

Associate Professors

Edward A. Arees, Ph.D.
Roger Brightbill, Ph.D.
Perrin S. Cohen, Ph.D.
François Grosjean, Ph.D.,
Doc. ès Lettres
Charles Karis, Ph.D.
Harry Mackay, Ph.D.
Joanne Miller, Ph.D.
Alexander A. Skavenski, Ph.D.

Assistant Professors

Martin Block, Ph.D.
Karen Geelen, Ph.D.
Stephen Harkins, Ph.D.
Claude Sigel, Ph.D.

Instructors

Cathy Cogen, A.B.
Marie Philip

Professional Preparation

Aims The undergraduate curriculum at Northeastern has been carefully designed to introduce students to the scientific underpinnings of modern psychology and enable a sophisticated choice among opportunities for advanced work.

The field of psychology, broadly defined as the science of behavior, has grown so rapidly that students aiming for careers in the field must almost always anticipate advanced study in specialized areas beyond the bachelor's degree. The diversity of academic and professional activities which we label "psychology" today may be seen in the following sampling of divisions of the American Psychological Association: *teaching, experimental, evaluation and measurement, physiological and comparative, developmental, personality and social, social issues, arts, clinical, consulting, industrial, educational, school, counseling, public service, military, adult development and aging, engineering, disability, consumer, philosophical, experimental analysis of behavior, history, community, psychopharmacology, psychotherapy, hypnosis*. Thus, undergraduates preparing to be psychologists, or those who just want to learn more about the field, have set quite a goal for themselves!

Description of Major Our courses are not merely aimed at preparing students for advanced training. They also reflect the personal and social concerns of today's undergraduates. For example, psychology has recently produced a new and powerful understanding of the way environmental and physiological factors affect man's behavior. It has developed a technology whose methods have already profoundly transformed individuals as well as society.

How do we evaluate this science and its technology? How do we ensure that researchers in psychology are free to investigate fully, and that the technology is applied humanely to create a better life for all people?

These are only a few of the questions Northeastern undergraduates will be asking as they progress through a newly designed curriculum which gives opportunities for laboratory practice and experimentation, field experiences in behavior technology, and small-group seminars to encourage critical and creative evaluation of psychology's accomplishments and its future.

Psychology explores many topics such as the function of the brain in determining behavior; how we see, hear, and learn; what behavioral science can offer in the problem areas of mental retardation, personality problems, infancy and old age; how we might suggest social changes based on laboratory data to increase men's and women's accomplishments and satisfactions in the modern world.

A View of the Major The Department offers both a Bachelor of Arts and a Bachelor of Science degree. The B.S. degree is usually recommended for students with a strong scientific or professional interest, who may ultimately consider applying to graduate schools in psychology or environmental science. In addition, the Department offers a special B.S. program for Psychology majors who wish to prepare for application to medical school. Since modern psychology is multidisciplinary, the B.A. and B.S. programs both include distribution requirements in allied sciences to fulfill the need for wide exposure to varying techniques of scientific practice and interpretation.

The sequence of elementary courses in the Department, taken by both B.A. and B.S. students, relies heavily on the personalized system of instruction, which seeks to allow students to progress at their own pace. Thus, the Northeastern Psychology program has an "independent study" quality about it, beginning as early as the freshman year. Students find this system flexible in terms of their needs and interests, as well as an intellectual challenge that requires a commitment to pursue mastery of course material.

With the science courses and elementary psychology courses as foundations, students in the B.A. and B.S. programs may either pursue a general course of study in psychology, or choose one of four major areas for concentration: Language and Cognition, Learning and Behavior Modification, Personality and Social, or Sensory and Neuropsychology. The curricula for the areas of concentration have been structured so that the student often takes courses not only in psychology, but also in related disciplines. For example, a student concentrating in Personality and Social takes courses in sociology, anthropology, and speech and drama. Final choice of concentration should be made only after personal consultation with the student's Psychology Department adviser.

Within each of the four concentrations, the student is expected to progress through a sequence of introductory and intermediate specialty courses, laboratory courses, and a seminar. The student is thus afforded the opportunity to explore a given area of psychology in depth, as well as to acquire an overview of the broader issues in psychology. Furthermore, all B.S. students and qualified B.A. students participate in the Department's Directed Studies Program, in which, under the direction of a faculty member, students engage in ongoing research projects in various laboratories in the Department. In this way, classroom learning is complemented by laboratory research, where the student may learn by doing.

Research Laboratories

The student who enrolls in laboratory courses and directed study courses will take advantage of the Department's resources for research which include: (a) in the field of learning, behavior laboratories for research with humans, monkeys, rats, and pigeons; and, in collaboration with the Walter E. Fernald State School, an instructional setting for research and training in behavior modification with retarded children and adults; (b) in neuropsychology and ethology, primate and rodent surgeries in neuroanatomical and histological laboratories, with apparatus for stimulating and recording activities of the brain; (c) in the psychology of vision and hearing, specialized enclosures and equipment for presenting visual and auditory stimuli and for measuring responses of the eye and the ear, including on-line computers; (d) in language and cognition, audio and video recording facilities and a computer for control of stimulus and response variables; and (e) in the field of personality, darkrooms, tachistoscopes and an eye-movement camera.

Program in Linguistics

In collaboration with the Departments of English, Modern Languages, Philosophy, and Sociology, the Department of Psychology offers an undergraduate program in linguistics. This program caters to the needs of students interested in general linguistics (phonetics and phonology, semantics, syntax, philosophy of language, historical linguistics); experimental linguistics (language and cognition, neurolinguistics, psycholinguistics); and linguistics applied to language-related work (applied linguistics, interpreting, language and literature). The program is appropriate for students who wish to pursue a wide variety of careers, including teaching, research, advertising, journalism, media, translation, and sign language interpreting, and offers the opportunity to prepare for eventual application to a master's or doctoral program for more advanced work and/or professional preparation in one of the many branches of linguistics.

Minor in Psychology

In accord with the College of Arts and Sciences' new policy on minors, the Department has recently instituted a minor in psychology. Each student is required

to take at least eight psychology courses, including the introductory psychology sequence, intermediate specialty courses, and at least one laboratory course. The minor program itself is quite flexible, designed for students with a broad range of interests and career goals. Students may choose either to distribute the eight psychology courses over a broad range of areas, or focus on one of the four areas corresponding to the major concentrations: Language and Cognition, Learning & Behavior Modification, Personality & Social, and Sensory & Neuropsychology. Each student will be assigned a faculty adviser in the Department to help him/her select the minor program that best suits his/her needs.



Courses in American Sign Language (ASL)

Students from all majors are welcome to participate in the extensive series of courses given by the Department on the American Sign Language of the deaf. Included are courses on beginning and conversational ASL and on Sign Language Interpreting. Students who pursue the sequence of conversational courses not only have the opportunity to learn ASL, but are exposed to the linguistic and cultural aspects of the deaf community. The series of interpreting courses allow the student an opportunity to become a Sign Language Interpreter. All courses are taught by experienced instructors, including deaf and hearing teachers, who have native proficiency in ASL and/or background in the linguistics of ASL.

Topics in Psychology Series (TIPS)

As well as offering courses designed primarily for psychology majors, the Department also offers a variety of courses without prerequisites that are addressed to specific topics of broad current interest. Slated for 1979-1980 are: Sleeping and Dreaming, Psychological Testing, Marriage and the Family, The Disordered Mind, Body Language, Sexual Behavior, Sports and Crowd Behavior, Brain and Mind, Psychology and the Law, Animal Communication, Man in Isolation, Magic and Illusion, Memory and Remembering, The Young Offender, and Behavior Problems and Their Therapy.

Sociology and Anthropology Department

Ronald J. McAllister, Ph.D., *Associate Professor and Chairperson*

Professors

Morris Freilich, Ph.D.
Blanche Geer, Ph.D.
Elliott A. Krause, Ph.D.
Frank F. Lee, Ph.D.
Morton Rubin, Ph.D.
Earl Rubington, Ph.D.

Associate Professors

Patricia Golden, Ph.D.
Wilfred Holton, Ph.D.
Lila Leibowitz, Ph.D.
Jack Levin, Ph.D.
Carol A. Owen, Ph.D.

Assistant Professors

Arnold Arluke, Ph.D.
Richard Bourne, Ph.D.
Marcia Bystry, Ph.D.
Mark Cooper, Ph.D.
C. Paul Dredge, Ph.D.
Freddie Hill, Ph.D.
Debra Kaufman, Ph.D.
Thomas Koenig, Ph.D.
Marlene MacLeish, Ed.D.

Professional Preparation

Aims The Department seeks a better understanding of the societies and social arrangements in which human beings live and die, how societies function and change, and how individuals, groups, and institutions interact.

Description of Major A major in this Department provides a background for a wide spectrum of careers in public or private service, as well as specific preprofessional training.

Students may concentrate in sociology and anthropology, or both. Students who wish to do both must design a program of their own with the help of an adviser. Those enrolled in premedical, prelegal, paramedical and a variety of other preprofessional programs should find that sociology and anthropology courses provide a useful background.

A View of the Major Majors may follow either a four-year program or the five-year cooperative course of study. Cooperative work assignments vary from placement in mental hospitals and social agencies to placement in university, government, and other research and policy-making settings. Transfer between the five-year co-op program and the four-year full-time program is possible, and registration in either is not an irreversible decision.

The Department offers both a Bachelor of Arts and a Bachelor of Science degree. The requirements for each degree, both in sociology and in anthropology, are outlined below. A student with specific goals may, of course, take more departmental electives than are required. A strong background in sociology-anthropology can be beneficial in a number of applied areas. B.A. students may wish to look at the concentration requirements for B.S. students and consult their advisers for assistance in planning programs with specialized goals.

The Department offers a B.S. with concentrations in anthropology or sociology. Students selecting this option must fulfill all the departmental requirements for the B.A. degree, and must take a coherent program involving additional course work as outlined below. Specializations either involve more intensive study within a concentration or are interdisciplinary.

A Minor in Sociology In addition to the major program, there is also the opportunity for students majoring in other disciplines to take a minor in Sociology.



The minor program consists of the following:

21.100 Introduction to Sociology

Two courses from among

21.240 Research Methods I

21.241 Research Methods II

21.280 Classical Social Thought

21.281 Current Social Thought

Plus any three-course specialization in sociology arranged between the student and adviser.

Anthropology

B.A. students in Anthropology must take at least forty-eight quarter hours in departmental courses, including forty in anthropology and eight in sociology. The exact distribution can be arranged. Minimum requirements are as follows:

- A. Preparatory—Introduction to Anthropology and Introduction to Sociology. (Prospective majors with equivalent background may be exempted. A student should consult a departmental adviser.)
- B. Core Requirements—at least three of the following, as available: Language and Culture; Individual and Culture; Human Origins; Myth and Religion; Sex, Sex Roles, and Family; Culture in Transition; Tribal Societies and Culture; and Peasant Society and Culture.
- C. Electives—Students must take at least six additional electives in anthropology and at least one additional in sociology. Qualified students are encouraged to take relevant graduate courses with the consent of the instructor. Majors should freely consult their advisers since courses elsewhere in the University may round out a special interest or focus.
- D. Nondepartmental Requirements—Six courses from the following social sciences: African-American Studies, Economics, History, Political Science, and Psychology.

B.S. students in anthropology take the same basic core of courses and, in addition, an individually designed specialization in an area of interest consisting of at least five courses. A student *must* confer with an adviser who will help develop such a program, place it on record, and supervise it. Interdepartmental and interdisciplinary specializations can be arranged in such areas as linguistics, Native American studies, biological anthropology, psychological anthropology, or area studies focusing on Latin America, Africa, Asia, and the Middle East.

Sociology

B.A. students in sociology must take at least fifty-two quarter hours in departmental courses, including forty-four in sociology and eight in anthropology, and must meet the following minimum requirements:

- A. Preparatory—Introduction to Anthropology and Introduction to Sociology. (Prospective majors with equivalent background may be exempted. A student should check with the Department.)
- B. Core Requirements—Statistical Analysis; Research Methods I; Research Methods II; Social Theory I; Social Theory II; Class, Power, and Social Change.
- C. Electives—The following are minimum requirements: two intermediate courses (at 100 level); two advanced courses (at 200 level); and one intermediate or advanced anthropology course. With the consent of the adviser, qualified students are encouraged to take certain graduate and directed study courses and/or the Senior Majors Seminar.

D. Nondepartmental Requirements—Six courses from the following social sciences: African-American Studies, Economics, History, Political Science, and Psychology.

B.S. students in sociology take the same basic core of courses and, in addition, an individually designed specialization in an area of interest consisting of at least six courses, three from within and three outside the Department. A student *must* confer with an adviser who will help develop such a program, place it on record, and supervise it. Specializations can be arranged focusing on social welfare, health services, political studies, urban studies, education and society, ethnic studies, and organizational studies. There are, of course, many other areas of specialization and possible combinations of courses. Following are a few examples. (Courses in the Department of Sociology/Anthropology are indicated by an asterisk.):

Social Welfare

- *Sociology of Poverty
- *Social Policy and Social Intervention
- *Human Service Organization
- *Sociological Issues in Welfare
- Social Welfare Problems
- Politics of Poverty
- Poverty and Discrimination

Health Services

- *Medical Sociology
- *Death and Dying
- *Health Care as a Social Issue
- *Culture and Mental Illness
- Medical Economics
- Community Medicine and the Delivery of Health Care
- Human Services Administration

Urban Studies

- *Urban Society
- *Community Analysis
- *Seminar in Urban Studies
- Urban and Metropolitan Government
- Urban Economics
- Urban Geography
- American Urban History

Law and Society

- *Crime, Conflict, and Justice
- *Sociological Theories of Crime
- *Social Policy and Social Intervention
- Civil Liberties
- Law and Society
- The Economics of Crime
- The Politics of the Criminal Justice System

Sex Roles and Family

- *Sex, Sex Roles, and Family
- *Sociology of the Family
- *Kinship and Society
- *Changing Sex Roles

- *Violence in Family
- Sex Roles in American Politics
- Women in History
- Politics of the Black Family

Organizational Studies

- *Sociology of Business and Industry
- *Administration and Formal Organization
- *Social Policy and Social Intervention
- *Human Services Organization
- Organization Theory I
- Industrial Organization and Public Policy
- People in Organizations

Social Psychology

- *Social Psychology (Sociology, Psychology Departments)
- *Anthropology of Aggression
- *Group Behavior I, II
- *Sem. Soc. Psych.
- Personality
- Psych. Lab. Soc. Psych.
- Psych. Lab. Personality

***Departmental Course**

These are just samples of approaches to these particular areas; there are many other possible combinations of courses. There are many other areas of specialization.

Music Department

Herbert H. Silverman, Ed.D., *Professor and Acting Chairman*

Professors

Roland L. Nadeau, M.M.

Leo Snyder, M.M.

William A. Tesson, M.M.

Assistant Professor

Joshua R. Jacobson, M.M.

Instructor

Matthew McGarrell, M.M.

Associate Professors

Reginald Haché, A.D.

Helen Keaney, M.M.

David Sonnenschein, D.M.A.



Aims The Department of Music offers a comprehensive number of courses for students with an interest in, or desire to learn about, music. The Department serves the musical and cultural needs of the University and its various Colleges. It aims to provide a wide range of musical experiences for students and the University community with emphasis on the aesthetic aspects of intelligent listening to, and learning about, our musical heritage.

Music Education The Department of Music, with the College of Education, offers a major in Music Education which is designed to prepare students to become teachers of vocal and instrumental music in the public schools. This program meets the standards of all accrediting agencies and for Massachusetts Music Teacher Certification.

The Department of Music offers a minor for students with special interests in music, who are majoring in other areas. Requirements for a music minor include a specific distribution of twenty-eight quarter hours as follows:

28.133	Fundamentals of Music
28.106	Music Theory I
28.107	Music Theory II
28.120	Music History Survey
28.140	Piano I

Plus *one* music elective from the following:

Music Literature of the Baroque Era
Music Literature of the Classic Era
Music Literature of the Romantic Era
Music Literature of the 20th Century

Department of Music courses fall within several categories: Basic Music Theory, Music Education, Historical Periods and National Styles, Individual Composers and Their Music, The Forms of Music, Basic Appreciation (overview), and Functional Performance.

In addition, faculty direct student performance organizations, such as the N.U. Choral Society, the N.U. Symphony Orchestra, and the N.U. Bands.

Students from these performance groups, the music faculty, and artists from the community-at-large participate in a program of over sixty concerts per year. Most of these concerts are free and open to the public.

College of Nursing

Juanita O. Long, R.N., M.S.N., C.A.G.S., *Dean*

Adele I. Law, B.S.N., M.S.N., *Assistant Dean*

Associate Professor

Jane Aroian, R.N., M.S.N.
Olivia M. Breton, R.N., M.Ed.
Elaine Capozzoli, R.N., M.A.
Janet Carroll, R.N., M.S.
Ellen T. Daly, R.N., M.S.N.
Flora M. DeScenza, R.N., M.S.
Jean P. Gilbert, R.N., M.S.
Barbara Goodfellow, R.N., M.S.N.
Mary P. Kane, R.N., M.S.
Mary C. Keaney, R.N., M.S.N.,
C.A.G.S.
Paula Fellows, R.N., M.S.
Jane M. Lee, R.N., M.S.
Marcia Lynch, R.N., M.S.
Susan C. Marchessault, R.N., M.S.
Geraldine A. Medici, R.N., M.S.
Marilyn M. Smith, R.N., M.S., M.B.A.
Joyce E. Tingle, R.N., M.S.,
Nancy Walden, R.N., M.S.N.
Mary E. Wilcox, R.N., M.S.
Delaine M. Williamson, R.D., M.S.

Assistant Professors

Nancy M. Carr, R.N., M.S.
Sally J. Cloutterbuck, R.N., M.S.N.
Lael T. Cutler, R.D., M.P.H.
Kathleen Govostes, R.N., M.S.
Barbara P. Madden, R.N., M.S., Ed.D.
Marian O. Newton, R.N., M.S.N.
Jeanne D. Otto, R.N., M.S.
Virginia Dooley Palmieri, R.N., M.S.
Alma Randall, R.N., M.S.
Barbara Whitmeyer, R.N., M.E.
Constance A. Wilis, R.N., M.S.

Instructors

Jane Ashley, R.N., M.S.N.
Sister Marie Bransfield, R.N., M.S.N.
Elcha Buckman, R.N., M.Ed.
Barbara DiBenedetto, R.N., M.S.
Annette Gaines, R.N., M.S.
Marge Lilienthal, R.N., M.S.
Nancy Lyga, R.N., M.S.
Patricia Williams, R.N., M.S.N.
Eve Ellen Wise, R.N., M.S.
Karen Wolf, R.N., M.S.

Professional Preparation

Aims First in the nation to operate on the Cooperative Plan, The College of Nursing was established at Northeastern University in 1964.

The Generic Baccalaureate Degree Program is five years in length and leads to the degree of Bachelor of Science in Nursing. The program is designed to offer students the opportunity to prepare themselves to become beginning professional practitioners, giving nursing care in a variety of patient-care settings, and to obtain the foundation for graduate study.

Programs for RNs The College of Nursing has instituted full-time day and part-time evening programs for registered nurses who wish to complete requirements for the Bachelor of Science Degree in Nursing.

The length of the program depends upon the individual's interest and ability to achieve advanced placement. Applicants whose knowledge of subject areas has been obtained through actual experience, previous educational preparation, or individual study, are encouraged to apply for credit through the advanced placement process. This opportunity is available in most of the nursing and nonnursing courses. Tests prepared by Northeastern University faculty and CLEP (College Level Examination Program) will be utilized.

Program for LPNs There is a special program for a limited number of qualified licensed practical nurses who wish to expand their educational background and become registered nurses. This program awards an Associate in Science Degree in Nursing.

A View of the Nursing Program In common with the other Basic Colleges at Northeastern, the College of Nursing operates on the Cooperative Plan. In addition to college instruction, each student has the opportunity to obtain practical experience as a paid employee of one of the cooperative health-care agencies. The work does not carry academic credit, but it must be satisfactorily completed. During periods of employment, students have the opportunity to increase nursing skills and gain significant experience in nursing settings, as well as earn money to help defray expenses.

The College of Nursing programs offer general education courses concurrently with nursing courses to provide the learning foundation for the practice of nursing. The Nursing major is planned in sequential order and draws on the content from the physical, biological and social sciences, and from the humanities.

Freshmen remain on campus for three consecutive quarters of academic study, and students in succeeding years alternate periods of study at Northeastern with periods of cooperative work experience in participating health agencies. Under the guidance of the College of Nursing faculty, clinical experience in the care of patients is introduced in the second year of the program. Approximately twenty outstanding hospitals and health-related agencies are utilized to provide facilities for clinical laboratories.

Cooperative work placements are arranged by a nursing coordinator in accordance with agreements made by the University and a number of hospitals in the Greater Boston area and surrounding communities. Cooperative work experience is a requirement for the degree except for the experienced registered nurse students and licensed practical nurse students. Student preferences as to assignment will be given consideration in conjunction with other factors.

Graduation Requirements

Degrees A Bachelor of Science degree is awarded at the completion of the program. All candidates must successfully complete all the prescribed courses and periods of cooperative work. One hundred and seventy-four quarter hours



are required for the Bachelor of Science. An overall scholarship average of C in both nursing and general studies is required for graduation. The program for LPNs awards an Associate in Science Degree, and requires one hundred and ten hours of credit.

Graduation with Honors

Candidates for the Baccalaureate degree who have attained superior grades in their academic work will be graduated with honors (3.0 gpa). Upon special vote of the faculty, a limited number of this group are graduated with high honors (3.5 gpa) or highest honors (3.7 gpa). Students must attend the University at least six quarters to become eligible for honors at graduation.

Accreditation

The program of the College of Nursing is fully accredited by the National League for Nursing and approved by the Board of Registration in Nursing of the Commonwealth of Massachusetts.

Licensure

The program of the College of Nursing is designed to prepare the graduates to qualify to take the professional examinations established by the Board of Registration in Nursing. Graduates are expected to take these examinations for licensure as registered nurses when they are first offered after graduation.

Acceleration Policies

Acceleration in Non Nursing Courses Enrolled students who wish to be considered for acceleration must have a minimum of 60 quarter hour credits accepted by Northeastern University's College of Nursing *before entrance* into the nursing program.

Students will be allowed to transfer courses toward the degree if a C or better was obtained and the description of the courses taken was similar to the course requirements at Northeastern University.

Acceleration in Nursing Courses All students will be required to take the nursing courses 80.201, 80.202, 80.203, 80.204, and 80.205. Students achieving a cumulative average of 3.0 for these courses will be eligible to petition to be considered for acceleration. Rotation into a clinical nursing course is contingent upon available openings in the course. Students accelerating in nursing courses will be required to meet the existing promotional policies. All students receiving a degree from Northeastern University *must be in residence for one year*.

Cooperative Education Experience Student's life experiences in health related fields will be examined to ascertain whether these meet the established objectives of cooperative nursing education. A student may petition to be exempt from a *maximum of four* cooperative experiences.

Special Requirements

Students in the College of Nursing are required to wear the school uniform in clinical laboratory areas during academic quarters. A modification of the uniform is worn during cooperative work periods.

All students must carry malpractice insurance. Arrangements for this insurance are made by the University.

†Sample Freshman-Year Program of Studies in the Nursing Program

First Quarter

Biology
Western Civilization
English
Nursing

Third Quarter

General Chemistry
Anatomy
Western Civilization
Nursing

Second Quarter

General Chemistry
Biology
English
Nursing

Basic Course Requirements: Baccalaureate Degree

I. General Requirements

Course	Q.H.	Course	Q.H.
*Biology	8	**Fundamentals of	
*Western Civilization	8	Psychology I & II	8
*English	8	**Social Anthropology	4
*General Chemistry	10	Principles of Sociology	4
*Anatomy	4	Social Psychology	4
*Microbiology	4	Electives (6)	24
*Physiology	8	(includes 8 Q.H. of	
		humanities)	

II. Professional Requirements

Course	Q.H.	Course	Q.H.
*Nursing	9	Maternal-Child Nursing	9
**Nursing	10	Psychiatric-Mental Health	
Growth & Development I & II		Nursing	9
in 3rd year	8	Public Health Nursing	9
Pharmacodynamics	3	Contemporary Nursing	9
Nursing	7		
Medical-Surgical Nursing	9		

*These courses are usually taken in the freshman year.

**These courses are usually taken in the sophomore year.

†Current requirements now being revised. Information concerning new requirements may be obtained from the office of the College of Nursing, 102 Robinson Hall.

College of Pharmacy and Allied Health Professions

Gerald E. Schumacher, Ph.D., *Dean*

Judith T. Barr, M.Ed., *Associate Dean*

John L. Neumeyer, Ph.D., *Director, Graduate School of Pharmacy and Allied Health Professions*

Joseph F. Palumbo, M.S., *Assistant to the Dean for Student Affairs*

Kathleen T. Foley, A.S., *Assistant to the Dean*

Professional Preparation

Aims Northeastern University recognizes the increased demand for well-educated pharmacists and allied health professionals. The College of Pharmacy and Allied Health Professions is pledged to meet this need by combining its unique Cooperative Plan of Education with a highly innovative academic program designed to offer students the opportunity to prepare themselves to become effective professional practitioners, to enter graduate schools, and to obtain employment in the many areas responsible for the delivery of health care.

A View of the Five-Year Program Fundamental to the College's approach to health-care education are:

1. A curriculum of highly relevant and closely integrated courses in the physical, biological, behavioral, and administrative sciences comprising the basis of modern professional practice;
2. A meaningful involvement in the clinical aspects of patient care via affiliations with teaching hospitals and related institutions;
3. A cooperative internship program offering students the opportunity to acquire the skills and actual experience integral to the total program;
4. A commitment to the search and advancement of new and progressive concepts, ideas, and philosophies of education and professional practice.

Facilities

The College occupies the Mugar Life Sciences Building on the Main Campus of the University. Completed in 1963, this multimillion-dollar facility offers proximity to all the academic and extracurricular activities of the University.

The building and the recently completed addition, with its well-equipped laboratories and classrooms for both undergraduate and graduate programs, are designed to anticipate the physical needs of a growing and progressive College. In addition to faculty and administrative offices, a Drug Information Center, and the graduate school, there are laboratories for radioisotopes, clinical chemistry, medicinal chemistry, drug analysis, prescription pharmacy, clinical pharmacy, hematology, pharmacology, respiratory therapy, medical record science, and clinical microbiology. A pharmaceutical manufacturing plant, animal rooms, and audiovisual capabilities for all programs are also featured in this five-story structure. Research facilities are available for upper-class students who participate in original research projects.

Transfers with Advanced Standing

The College of Pharmacy and Allied Health Professions may accept qualified

transfer students who have successfully completed one or more years of preprofessional course work in an accredited college or university.

Degrees Granted

The degrees of Bachelor of Science, Bachelor of Science in Pharmacy, Bachelor of Science in Respiratory Therapy, Bachelor of Science in Toxicology, Associate in Science, and Associate in Science in Dental Hygiene are awarded to qualified candidates.

Accreditation

Each of the programs offered by the College is accredited by the appropriate professional group. The College holds membership in both the American Association of Colleges of Pharmacy and the American Society of Allied Health Professions.

Dental Hygiene

Professional Preparation

Aims The Forsyth School for Dental Hygienists conducts a program of dental hygiene education in cooperation with Northeastern University. Students in this two-year program attend classes both at the Forsyth Dental Center and Northeastern. The dental hygienist is licensed to render preventive services to the patient under the supervision of a dentist. Services include administering dental prophylactic treatment, preparing dental radiographs, and teaching prescribed methods of maintaining dental health.

A View of the Program The first year includes courses in anatomy, chemistry, microbiology, histology, head and neck anatomy, nutrition, dental materials, radiology, periodontology, dental hygiene and clinical dental hygiene instruction. In the second year, students take general courses such as English, sociology, and psychology; professional courses in pathology, periodontology, public health, pharmacology, and dental hygiene; and continue to receive clinical dental hygiene instruction.

Degrees Students completing the program will receive the Certificate in Dental Hygiene from Forsyth, and the Associate in Science Degree in Dental Hygiene from Northeastern University. Graduates are required to take the state board examinations in the state in which they intend to practice.

Accreditation

This program is accredited by the Commission on Accreditation of Dental and Dental Auxiliary Education Programs of the American Dental Association.

Other Information

Students are admitted directly to the Forsyth School for Dental Hygienists and should contact the school for catalogs and applications by writing to 140 The Fenway, Boston, Massachusetts 02115.



Sample Freshman-Year Program of Studies in Dental Hygiene**First Quarter**

Functional Human Anatomy
 Chemistry
 Dental Anatomy
 Radiology
 Dental Hygiene
 Clinical Dental Hygiene

Third Quarter

Microbiology
 Head and Neck Anatomy
 Dental Materials
 Periodontology
 Dental Hygiene
 Clinical Dental Hygiene

Second Quarter

Functional Human Anatomy
 Chemistry
 Nutrition
 Histology
 Dental Hygiene
 Clinical Dental Hygiene

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
**English Composition and English Literature	8	**Foundations of Psychology I	4
*Chemistry	6	**Sociology	4
*Microbiology	4	*Functional Human Anatomy	10

II. Professional Requirements

Course	Q.H.	Course	Q.H.
*Dental Anatomy	3	**Pathology	3
*Radiology	2	**Periodontology	4
***Dental Hygiene	12	**Public Health	2
***Clinical Dental Hygiene	23	**Pharmacology	2
*Nutrition	2	*Head and Neck Anatomy	2
*Histology	2	*Dental Materials	2
		*Independent Study	2

**These courses are usually taken in the first year.*

***These courses are usually taken in the second year.*

****These courses are usually taken in both the first and second years.*

Health Record Administration

Judith Weilerstein, M.P.H., *Associate Professor and Director*

Instructor

Sheryl A. Rimer, B.S.

Professional Preparation

Aims A health record administrator may organize, operate, and manage Medical Record Services. The program offers the student the opportunity to develop the capability to design health information and retrieval systems; to plan, organize, and direct medical record services; to develop, analyze, and evaluate medical records and indexes; to work with the medical and administrative staffs in developing methods for evaluation of patient care, and in research projects utilizing health-care information.

A View of the Five-Year Major In the first two years, the student will concentrate on liberal arts and sciences, including the required human anatomy and physiology courses with an overview of microbiology. Courses in health-care science are offered to help the student prepare for a role in health administration and health-care delivery.

The program offers the opportunity for preparation in administration, departmental and hospital management and organization, and in electronic data processing. The professional courses in medical record science, medical terminology, and hospital law are complemented by directed applied study in medical record science at an affiliated health facility.

Degree The Health Record Administration program is offered on the Cooperative Plan. Successful completion of the prescribed curriculum, including the directed study at an affiliated health center, will permit the award of a Bachelor of Science degree. Usually, graduates are eligible to write the registration examination given by the American Medical Record Association.

Accreditation

This program is approved by the Committee on Allied Health Education and Accreditation in cooperation with the American Medical Record Association.

Special Information

Students interested in this profession should arrange for an interview with the program director.

Sample Freshman-Year Program of Studies in Health Record Administration

First Quarter

English Composition
Biology
Math
Psychology
Orientation to Health Records I

Third Quarter

Psychology
Modern Language or Pol. Sci.
Elective
Microbiology

Second Quarter

Biology
Math
Modern Language or Pol. Sci.
Orientation to Health Records II
English Literature

In addition to the above courses, a student may choose to take ROTC.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
*English Comp. and English Literature	8	Organizational Behavior	8
*Mathematics	8	Introduction to Computer Science	4
Communications	4	*Psychology	8
*Biology (General and Animal)	8	**Sociology	4
**Anatomy and Physiology	10	*Modern Language or Social Sciences	8
**Microbiology	3	General Electives	16
Statistics	4		
Economics or Western Civilization	8		

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Orientation to Health Records	2	Seminar in Medical Records	2
Health Records Science I-IV	16	Health Science Education	2
Medical Terminology	4	Applied Study	9
Foundations of Medical Science	6	Hospital Organization and Management	4
Hospital Law	2	Application of Med. Comp.	4
Organization and Management Medical Record Dept.	8	*Dynamics of Health Care Systems	4
Applied Health Statistics	4	Quality Assurance	4
Clinical Seminar	2	Independent Study	4
		***Special Topics	

*These courses are usually taken in the freshman year.

**These courses are usually taken in the sophomore year.

***Assigned per Program Director.

Medical Laboratory Science Medical Technology

Britta L. Karlsson, M.S., *Associate Professor and Acting Director*

Associate Professors

Judith T. Barr, M.Ed.

James J. Gozzo, Ph.D.

Assistant Professors

Gerald L. Davis, Ph.D.

Bynum M. Jackson, Ph.D.

John Klaas, II, Ph.D.

B. Susan Rogers, M.S.

Professional Preparation

Aims Medical technology involves the application of principles of natural, physical, and biological sciences to the performance of laboratory determinations used in the diagnosis and treatment of disease and the maintenance of health. It is projected that the demand for properly educated and certified medical technologists will increase as a result of greater emphasis on quantity and quality of health-care delivery. With educational opportunities in hematology, immunohematology, clinical chemistry, and clinical micro-

biology, students may prepare themselves for positions not only in a hospital laboratory but also in research, industrial, and governmental institutions.

For qualified graduates, additional opportunities may be found in laboratory administration, education, and graduate programs.

A View of the Five-Year Major Students enter the College as health professions majors in the Medical Laboratory Science program. The College offers a five-year, modified-cooperative course of study which culminates in the degree of Bachelor of Science. Upon completion of the professional segment and baccalaureate degree, the student should be eligible to write a national certification examination in medical technology. Some states may require additional licensure examinations.

During the junior and senior years, qualified students are assigned to the hospital components of the medical technology program. To qualify for entrance into the hospital component of the program, a student must have an acceptable point average, have successfully completed all University course requirements, including those in biology, chemistry, mathematics, and medical laboratory science, and meet other criteria established by the Clinical Studies Admission Committee. The professional courses in hematology, pathogenic microbiology, serology, mycology, parasitology, clinical chemistry, instrumentation, and blood banking are included in both the University and the hospital components of the program.

Students register at the University for 12 quarters including two interim sessions of five days each. This 12-quarter curriculum includes the academic program plus all current clinical and professional requirements.

Degree The degree granted will be the Bachelor of Science.

Accreditation

Applications for the integrated university-hospital medical technology program have been submitted to the National Accrediting Agency for Clinical Laboratory Sciences and the Commission on Allied Health Education of the American Medical Association.

Option

Certain students enrolled in the baccalaureate degree program may choose to write the certification examination for technician or for cytotechnologist at the associate degree level. Having completed the first two years of the academic curriculum and the basic professional courses, qualified students may take the appropriate practicum leading to eligibility to write the certification examination for medical laboratory technician or for cytotechnologist and may earn the associate degree at the University.

Sample Freshman-Year Program in Medical Laboratory Science

First Quarter

Math or Calculus
General Chemistry
General Biology
English Composition

Second Quarter

Math or Calculus
General Chemistry
Animal Biology
Modern Language I or Elective
Orientation to Medical Laboratory
Science

Third Quarter

Elective
English Literature
Mod. Lang. II or Elect.
Basics of Medical Laboratory
Science
Dynamics of Health Care

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
*English and English Literature	8	Genetics and Developmental Biology	4
*Biology—General and Animal	8	Physics	8
*Math or Calculus	8	Microbiology	4
*General Chemistry	10	Int. Mod. Language and/or other Humanities	12
**Organic Chemistry	10	Social Sciences	12
**Analytical Chemistry	4	General Electives	12
**Physiology	8	Biology Elective	4
Cell Biology	4		

II. Professional Requirements

Course	Q.H.	Course	Q.H.
*Dynamics of Health Care	2	Clinical Chemistry	5
*Orientation to Medical Laboratory Science	1	Clinical Microbiology	5
*Basic Medical Laboratory Science	3	Applied Study (at hospital)	15
Basic M.L.S. Hematology I	3	Communications in the Health Sciences	4
**Basic M.L.S. Hematology II	3	Laboratory Management	2
**Basic M.L.S. Immunohematology	3	Health Science Education	2
**Basic M.L.S. Chemistry and Instrumentation	5	Instrumentation I	1
**Basic M.L.S. Clinical Microbiology	6	Instrumentation II	1
Hematology	3		
Immunohematology	2		

*These courses are usually taken in the freshman year.

**These courses are usually taken in the sophomore year.

Pharmacy

Albert H. Taubman, Ph.D., *Associate Professor and Chairman*

Professors

Arnold S. Goldstein, J.D.
O. James Inashima, Ph.D.
Gerald E. Schumacher, Ph.D.
Pierre F. Smith, Ph.D.

Associate Professors

Leon D. Shargel, Ph.D.
Larry N. Swanson, Pharm.D.

Assistant Professors

Joseph A. Grisafe, Ph.D.
Clifford E. Hotte, Ph.D.
Samuel J. Matthews, Pharm.D.
Paul A. Michelson, M.S.
Fred N. Schneiweiss, Pharm.D.
Loretta A. Wong, Pharm.D.
Andrew B. C. Yu, Ph.D.

Medicinal Chemistry/ Pharmacology Department

Robert F. Raffauf, Ph.D., *Professor and Acting Chairman*

Professors

John L. Neumeyer, Ph.D.
Elliot Spector, Ph.D.

Associate Professors

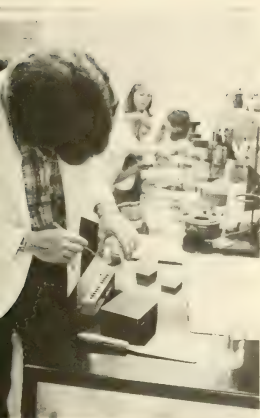
Jeffrey B. Blumberg, Ph.D.
Roger W. Giese, Ph.D.
Donald S. Kosersky, Ph.D.
Victor D. Warner, Ph.D.

Assistant Professors

Norman R. Boisse, Ph.D.
Richard C. Deth, Ph.D.
Simon H. Kuttub, Ph.D.

Professional Preparation

Aims The need for well-qualified pharmacists is likely to continue in direct response to greater emphasis on health care, and, in particular, to the newer and more diversified utilization of those now in practice in this country. The majority of pharmacists are associated with community practice, and many of these are self-employed. Hospital pharmacy and institutional practice have attracted a large number of practitioners and represent the fastest growing area of the profession. The increased use of the pharmacist as a drug consultant to the medical and nursing staffs of these institutions has broadened the scope of professional opportunity and given practitioners even greater involvement as part of the health team.



Pharmacy also offers careers in research, production, government, law enforcement, and education; a considerable number of our graduates have entered leading graduate and professional schools. Another significant trend is found in the increasing number of women entering the profession. Approximately one-third of the entering class is now composed of women.

A View of the Five-Year Major The College offers a five-year curriculum which leads to the degree of Bachelor of Science in Pharmacy. The curriculum includes instruction in each of three natural divisions: (1) liberal arts courses in general education (the humanities and social sciences); (2) mathematics and the basic physical and biological sciences; and (3) courses in the areas of professional instruction—medicinal chemistry, pharmacology, pharmaceuticals, pharmacy administration, and clinical pharmacy.

The curriculum offers a progressive approach to pharmaceutical education. Emphasis is placed on the biologic and chemical applications of drug therapy, and the College maintains affiliations with several major teaching hospitals in which students undertake a clinical clerkship in their last professional year. The range of professional electives offered within the College, as well as those approved professional electives offered by the other basic colleges, provides program flexibility, thus giving students the opportunity to specialize. Teachers throughout the College use up-to-date concepts in educational techniques, including audiovisual material and directed study opportunities. The academic program is highly coordinated with the cooperative education experience to provide meaningful training for a contemporary pharmacist.

In addition, through the Graduate School of Pharmacy and Allied Health Professions, programs leading to the Master of Science and Doctor of Philosophy degrees are offered. A new graduate program in clinical pharmacy leading to the Doctor of Pharmacy (Pharm. D.) is scheduled to commence in the Fall of 1980.

Graduation Requirements

Degree Candidates for the Bachelor of Science in Pharmacy degree must complete all of the prescribed work of the curriculum. Students who undertake the Cooperative Education program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive a degree until at least eight quarters of academic work immediately preceding graduation have been completed at Northeastern. Exceptions to this requirement may be made for students transferring from another college of pharmacy.

Graduation with Honors

Candidates who have attained superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a limited number of this group may be graduated with high honors or with highest honors. Students must have been in attendance at the University for at least eight quarters before they become eligible for honors at graduation.

Accreditation

The undergraduate pharmacy program offered by the College of Pharmacy and Allied Health Professions subscribes to the standards established by the American Council on Pharmaceutical Education and the American Association of Colleges of Pharmacy of which it is a member.

Licensure—Pharmacy

Pharmacists must meet certain requirements to obtain a license from the state in which they wish to practice. These requirements ordinarily include graduating

from an accredited college of pharmacy, passing an examination given by a State Board of Pharmacy, and completing an "internship" or apprenticeship.

The internship is a period of supervised practical experience in a preceptor pharmacy. This is generally satisfied during the cooperative work periods commencing at the end of the student's second academic year. During the periods of full-time employment, the salary received has often enabled students to pay a substantial part of their educational expenses. Students also may apply up to 400 hours of the required academic clinical clerkship experience to their internship requirements.

Sample Freshman-Year Program of Studies in Pharmacy

First Quarter

Basic Math
General Chemistry
L. A. Electives

Second Quarter

Calculus
L. A. Elective
Biology
English

Third Quarter

Biology
English
General Chemistry
Basic Pharmacy

In addition to the above courses, a student may choose to take Basic ROTC.

Basic Course Requirements

I. General Requirements

Course	Q.H.	Course	Q.H.
*Basic Math	4	Anatomy-Physiology	10
*Calculus	4	General Biochemistry	4
*General Chemistry	10	Clinical Biochemistry	4
*English	8	Microbiology	4
*Biology	8	Liberal Arts Electives (8)	32
**Physics	8		
**Organic Chemistry	10		

II. Professional Requirements

Course	Q.H.	Course	Q.H.
*Basic Pharmacy	3	Public Health	3
Pharmaceutics I & II	8	Professional Practice I & II	8
Medical Chemistry/ Pharmacology I-IV	20	Jurisprudence	4
Drug Analysis	5	Pharmacy Administration	4
Physical Pharmacy	4	Clinical Pharmacy	14
Pathology	4	Placement Techniques	1
Toxicology	4	Professional Electives (4)	15-20
Biopharmaceutics/ Pharmacokinetics	4	General Elective	4
Pharmacology Lab I & II	2	Introduction to Clinical Pharmacy	3
		Professional Practice Lab. I & II	2

*These courses are usually taken in the freshman year.

**These courses are usually taken in the sophomore year.

Toxicology

David R. Brown, Sc.D., *Associate Professor and Director*

Professional Preparation

Aims Toxicology is the study of the injurious effects of substances on living organisms. It is often considered a subdivision of pharmacology, which is the study of chemical interactions between substances and biological objects. Toxicology can be considered as the science that defines the limits of safety of chemicals and other substances. Thus, one of the chief responsibilities of the toxicologist is prediction. By gathering sufficient data on the identification and toxicity of materials and adequate knowledge of the mechanisms by which effects are produced by materials, the toxicologist can make reasonable predictions of their hazard and impact in the biosphere.

The activities and contributions of toxicologists are many and varied. The profession's subdivisions of materials, radiation, and veterinary toxicology illustrate the diversity of investigations in which toxicologists may participate. The toxicologist working in the biomedical area is concerned with intoxications by drugs and other chemicals as well as the demonstration of drug safety or danger prior to release into the market.

Clinical toxicologists may be involved with:

1. antidotal treatment of poisoning
2. drug abuse, addiction, and detoxification
3. drug monitoring and drug interactions
4. teratogenesis (drug-induced birth defects) and other toxicity-screening procedures

The **industrial or environmental toxicologist** is concerned with the recognition, identification, and quantitation of relative hazard from occupational or public exposure to toxicants. This concern is closely related to private and governmental responsibilities to assure the safety of workers and the general public in contact with industrial and commercial products.

Industrial or environmental toxicologists may be involved with:

1. chemical carcinogens
2. pesticides or other "economic poisons"
3. air, soil, and water pollution
4. food additives

Forensic toxicology is a hybrid of analytical chemistry and fundamental toxicological principles, and is concerned with the medicolegal aspects of the harmful effects of chemicals.

Forensic toxicologists may be concerned with:

1. the cause of death in postmortem investigations
2. isolation and detection of toxicants in biologic material
3. drug abuse monitoring programs
4. medicolegal aspects of poisoning

The faculty of Northeastern University's College of Pharmacy and Allied Health Professions feels that increased concern for the safety of drugs, chemicals, and cosmetics in the human population and in the environment, and new

legislation regarding toxic substances, may create a high demand for toxicologists at the Bachelor of Science level. One of the College's principal goals is to train qualified professionals who will be able to meet the health-care needs of society. The concept of an undergraduate degree in toxicology is relatively new; so are the demands of an increasingly complex chemical environment. Currently, only two institutions offer B.S. degrees toxicology, and a few schools are planning such programs. Yet, there is an estimated need for 5,000–10,000 people with bachelor's degrees to act as technical support staff for Ph.D.-level toxicologists. Northeastern University has created an innovative program in which its diverse academic resources offer training to this new breed of toxicologist.

The core curriculum is enhanced by contributions from the University's Institute of Chemical Analysis, Applications and Forensic Sciences, the Northeastern University Marine Science Institute in Nahant, and the Environmental Engineering faculty.

Recent manpower studies sponsored by private and federal agencies predict a great demand for toxicologists. Although prior to 1970 a need for toxicologists existed, the introduction of numerous federal and local laws aimed at protecting the environment, safeguarding employees in their workplace, and protecting consumers against hazardous household products has created a critical shortage of toxicologists. Employment opportunities are being created in industry (chemical, cosmetic, and pharmaceutical firms) and government (for example, Environmental Protection Agency, Food and Drug Administration, National Institute of Occupational Safety and Health) as well as in police departments and various clinical settings. Students may also consider entering graduate programs in toxicology.

A View of the Five-Year Major The Toxicology Program leads to the Bachelor of Science degree in five years under the Cooperative Plan. The curriculum is a combination of liberal arts, science, and professional courses that offer students the opportunity to prepare themselves to practice toxicology in a variety of settings. Required and elective professional courses offer students the most current material. The professional elective courses may be selected from Medical Laboratory Science, Chemistry, Biology, Sociology, Criminal Justice, Computer Programming, Mathematics, and Earth Sciences.

Toxicology students begin their cooperative experience in the sophomore year.

Degree The degree granted will be the Bachelor of Science in Toxicology.

Sample Freshman-Year Program of Studies in Toxicology

First Quarter

Math.
Elective
Biology
English

Third Quarter

Calculus
English
Liberal Arts Elective
Gen. Chem.

Second Quarter

Calculus
Gen. Chem.
Biology
Elective

In addition to the above courses, a student may choose to take Basic ROTC.

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
*Math	4	**Anatomy-Physiology	10
*Calculus	8	General Biochemistry	4
*General Chemistry	10	Clinical Biochemistry	4
*English	8	Microbiology	4
*Biology	8	**Biostatistics and Computers	4
**Physics	8	Ident. of Organic	
**Organic Chemistry	10	Compounds	3
**Environmental Problems	4	Instrumental Analysis	5
		Electives	40

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Drug Analysis	5	Drug Interactions	4
Medicinal Chemistry/ Pharmacology I-IV	20	Public Health	4
Identification of		Epidemiology	4
Abuse Drugs	4	Medical Laboratory Sciences	6
Pathology	4		
Toxicology I-IV	16		
Pharmacology			
Laboratory I-II	2		
Toxicology Laboratory	2		

*These courses are usually taken in the freshman year.

**These courses are usually taken in the sophomore year.

**Physician Assistant**

Suzanne B. Greenberg, M.S., *Director*

Professional Preparation

Aims Lecturers for this program include faculty from the medical schools in the Boston area.

This is a program for the education of the Primary Care Physician Assistant who is a skilled person qualified by academic and clinical training to provide patient services under the supervision and responsibility of a doctor of medicine. The Physician Assistant may work in a variety of settings, such as a physician's office, clinic, hospital, or nursing home. It is expected that the Physician Assistant will be able to do at least the following: elicit a detailed and accurate history, perform a physical examination, perform routine procedures such as the drawing of blood samples, give injections, suture and care for

wounds, counsel the patient on matters relating to health, and provide evaluation and treatment in life-threatening emergencies.

A View of the Major This 21-month program, which begins in September, includes didactic work at Northeastern University and clinical rotations in medicine, surgery, pediatrics, emergency medicine, psychiatry, and obstetrics at teaching hospitals in the Boston area. Upon satisfactory completion of the program, students will be awarded a certificate by the University and are eligible to take the National Certifying Examination given by the National Commission on Certification of Physician's Assistants. Some states require successful completion of this examination in order to practice.

Special Requirements The program was originally open only to medical corpsmen in the armed forces, but is now open to other candidates. However, it is not designed for the high school senior entering an institution of higher learning for the first time. Applicants must have successfully completed a minimum of two years of college, including courses in chemistry and biology on the college level. (Since the educational attainment of a majority of applicants exceeds the minimum requirements, those accepted often hold baccalaureate degrees.) In addition, successful applicants must have had at least one year of direct patient-care experience.

Scholastic Aptitude Test scores are required for applicants without a degree. Application materials may be obtained by contacting the Physician Assistant Program Office at 202 Robinson Hall or by telephoning (617) 437-3195.

Accreditation

The Physician Assistant program meets the requirements established by the Council on Medical Education of the American Medical Association as essential for an approved educational program to train primary-care physician assistants. Membership in the Association of Physician Assistant Programs is maintained. The program is also approved by the Massachusetts Board of Approval and Certification of Physician Assistant Programs.

Other Information

This program is offered by Northeastern University in cooperation with the Massachusetts Medical Society and the Office of Special Programs in the Department of Health, Education and Welfare.

Sample First-Year Program of Studies in the Physician Assistant Program

First Quarter

Anatomy & Physiology I
Physical Diagnosis
Principles of Interviewing
Principles of Pediatrics
Patho-Physiology and Medicine I
Roles, Rules, Ethics, and Resources
for Physician Assistants

Third Quarter

Patho-Physiology and
Medicine III
Basic Pharmacology
Applied Study

Second Quarter

Anatomy and Physiology II
Basic Medical Laboratory Science
Patho-Physiology and Medicine II
Physiologic Basis of Disease
Principles of Obstetrics and
Gynecology
Principles of Psychiatry

Basic Course Requirements**II. Professional Requirements**

Course	Q.H.	Course	Q.H.
Anatomy & Physiology	8	Basic Medical Laboratory Science	4
Medical Care and Current Social Problems	2	Basic Pharmacology	3
Essentials of Physical Examination	5	Medical Therapeutics	3
Principles of Interviewing	2	Survey of Rehabilitation Medicine	2
Principles of Psychiatry	3	Basic Diagnostic Radiology	2
Physiologic Basis of Disease-Neurophysiology	2	Principles of Obstetrics and Gynecology	3
Patho-Physiology and Medicine I, II & III	6	Fundamentals of Electrocardiography	2
Principles of Pediatrics	3	Roles, Rules, Ethics, and Resources for Physician Assistants	2
Principles and Concepts of Surgical Intervention in Disease Process	3	Patient Education and Counseling	2
Nutrition	3	Applied Study I-V	20
Medical Ethics	3	Emergency Medicine	3
The Aging Process	3		

Respiratory Therapy

Thomas A. Barnes, M.S., *Associate Professor and Director*

Associate Professor

Patrick F. Plunkett, M.S.

Instructor

Sigute V. M. Perrault, B.A.

Assistant Professors

Martha R. Brock, M.S.

Mary E. Fitzmaurice, M.Ed.

Professional Preparation

Aims Respiratory therapy is an allied health specialty, instrumental in the diagnosis, treatment, management and preventive care of patients with cardiopulmonary problems. These patients may be found in the newborn nursery, surgical and medical wards, emergency rooms, outpatient departments, and intensive care units of hospitals. They may be suffering from a variety of acute and chronic conditions that are either life threatening or disabling.

Patients suffering from a multiplicity of disorders from head injuries may require supportive mechanical ventilation. With the assistance of sophisticated ventilatory and monitoring equipment designed specifically for artificial ventilation, respiratory therapists become an intricate and essential part of the critical-care team. Through proper respiratory care and management, many patients that would not have survived are now being returned to an active life. In essence, the respiratory therapist is a life support specialist.

In the hospital, "Code Blue, Code 99, Dr. Heart, Dr. Pacemaker" are all calls that may signify a life and death situation of cardiac and/or pulmonary arrest. The calls alert respiratory therapists to respond as members of an emergency cardiopulmonary arrest team, working alongside physicians and nurses. Respiratory therapists become responsible for life support of the patient through airway management, artificial ventilation, external cardiac massage and many other sophisticated emergency support measures.

While intensive respiratory care is essential, routine patient care is equally important. Working under physician's orders, respiratory therapists carry out specific therapeutic measures to assist respiratory-distressed patients. Respiratory therapists must be experts in providing and recommending specialized and selective therapeutic respiratory care. They must be competent in such areas as medical gas administration, including oxygen; humidification, aerosols, intermittent positive pressure breathing (IPPB); bronchopulmonary drainage and exercises, cardiopulmonary resuscitation, mechanical ventilation, airway management, pulmonary function studies; blood gas analysis; and physiologic monitoring. Because respiratory therapy procedures may alter the patient's physiologic status, astute patient care and observation by trained respiratory therapists are essential.

Respiratory therapists are involved in the treatment of cardiac and pulmonary ailments such as cardiac failure, asthma, pulmonary edema, emphysema, cerebral thrombosis, drowning, hemorrhage and shock.

Medications are given in such forms as aerosols or sprays through mechanical devices. These medications are then transmitted through the airways so that they may act on local areas within the lungs, as well as diffused into the body's circulatory system.

Respiratory therapists make use of a variety of testing techniques to assist in medical research and diagnosis of disorders. One example is the use of radioactive gases or aerosols which are then safely administered to the patient through the respiratory system. Various portions of the lung may be screened and evaluated for obstructions, restrictions and other abnormalities. Another example is the securing of lung secretions for cancer diagnosis. The most common diagnostic examinations are the measurement of lung volumes and capacities, and flow patterns and pressures.

New respiratory technology has been used in the treatment of gangrene, carbon monoxide poisoning, tetanus and many other disorders. But a still greater expansion can be seen as a result of the problems associated with environment (smoking, industrial pollution, etc.), and advancements in aerospace medicine.

A View of the Major Students enter the College as majors in the Respiratory Therapy program. Mathematics, chemistry, and the physical, biological, medical, and health sciences provide the bases for the professional instruction in Respiratory Therapy. English, psychology, and elective courses in the humanities and social sciences provide the general educational background. Clinical study at the affiliated hospitals provides the opportunity for direct patient care and the immediate application of highly specialized techniques.

Degree The curriculum leads to the Bachelor of Science in Respiratory Therapy, or Associate in Science Degree, and includes academic quarters at the University, a structured clinical program, and assigned co-op quarters. Successful completion of the program makes students eligible for the first part of the examinations administered by the National Board for Respiratory Therapy.

Accreditation

This program is accredited by the American Medical Association.

Sample Freshman-Year Program of Studies in Respiratory Therapy**First Quarter**

English Composition
 General Chemistry
 Basic Animal Biology
 Respiratory Therapy Seminar I
 Algebra and
 Trigonometry

Third Quarter

Microbiology
 General Chemistry
 Physics
 Respiratory Therapy Seminar III
 Liberal Arts Elective

Second Quarter

English Literature
 Calculus
 Respiratory Therapy Seminar II
 Basic Animal Biology
 Physics

Basic Course Requirements**I. General Requirements**

Course	Q.H.	Course	Q.H.
Biology	8	Pharmacology	4
Anatomy and Physiology	10	English Composition and Literature	8
Microbiology	4	*Management Principles	4
General Chemistry	10	Social Science Elective	4
*Organic Chemistry	10	Speech or Communica- tions Elective	4
*Biochemistry	4	Liberal Arts Electives	12
Physics	8	*Liberal Arts Electives	24
Algebra and Trigonometry	8		

II. Professional Requirements

Course	Q.H.	Course	Q.H.
Respiratory Therapy Seminars	3	Respiratory Care for the Critical Patient	3
Clinical Seminars	2	Introduction to Pediatric Respiratory Care	2
*Advanced Clinical Seminars I, II, III, IV	4	Cardiopulmonary Lab Technology	3
Professional Practice Labs I, II, III, IV	4	Cardiopulmonary Lab Practice	1
Cardiopulmonary Physiology	4	Clinical Practice I	4
*Advanced Clinical Physiology	4	Clinical Practice II	4
Cardiopulmonary Disease Foundations of Medical Science	3	*Advanced Life Support Systems I, II	8
Hospital Law and Ethics	2	*Advanced Medical Monitoring	4
Medical Terminology	1	*Advanced Emergency Care	4
Introduction to Patient Care	2	*Respiratory Care for the Neonatal Patient	4
Introduction to Respiratory Care	3	*Practicum in Critical Care I, II	4
Respiratory Care for the Med-Surgical Patient	3	*Directed Study	2

*Additional requirements for the Bachelor of Science Degree in Respiratory Therapy.

Other Schools and Colleges of the University



Lincoln College

In addition to full-time curricula described earlier in this bulletin, Lincoln College offers interdisciplinary and certificate programs providing technological and professional development opportunities to meet special needs of the part-time student. These programs provide educational opportunities for students who must pursue full-time employment but who desire to initiate or continue their academic work.

The part-time evening program includes pretechnology preparatory courses and degree programs leading to the Associate in Engineering (A.E.), the Associate in Science (A.S.), and the Bachelor of Engineering Technology (B.E.T.). The B.E.T. and A.E. degree may be earned in Civil, Mechanical, Electrical, and Computer Technology. The A.S. degree may be earned in the Mathematical, Physical, and Chemical Sciences and in Aviation Technology.

University College

University College is committed to the education of mature adult students who wish to live effectively in today's complex society. Programs are specifically designed to satisfy their changing professional, cultural, and social needs and interests.

Degree programs have been developed in 39 major fields of study in the areas of business administration, education, liberal arts, law enforcement, therapeutic recreation, and health-related programs. Flexible curricula are offered on a part-time basis Monday through Saturday during day and evening hours convenient to adult students. Students may select single courses or may enroll in full degree programs leading to the Associate in Science or the Bachelor's degree. Short-term seminars are also offered for credit. Classes are scheduled in locations which are accessible to the urban and suburban community. Students may attend classes at the Huntington Avenue Campus, Boston; or the Suburban Campus, Burlington, Massachusetts, as well as other off-campus locations north, south, and west of Boston.

University College programs are constantly evaluated and redesigned when necessary to keep pace with the changing needs and interests of its students and the community.

Program advisers are available by appointment day and evening in the University College Office. They offer assistance to students in planning a program suitable to their general educational and career objectives and also answer questions relating to degree requirements, course sequence, and proper scheduling of courses. Appointments may be arranged by calling the University College Office, 617-437-2400, or by coming in person to 102 Churchill Hall. There is no charge for this service.

Program advisers are also available during registration at all registration sites. No appointment is necessary.

Graduate and Professional Schools

The 10 graduate and professional schools of the University offer day and evening programs leading to degrees as follows:

Actuarial Science

Master of Science in Actuarial Science.

Arts and Sciences

The Master of Arts degree may be earned in Economics, English, History, Political Science, Psychology, Sociology, and Social Anthropology. The Master of Science degree is available in Biology, Chemistry, Economic Policy and Planning, Mathematics, and Physics. The Master of Science in Health Science and the Master of Public Administration degrees are also offered. In addition, there are programs leading to the Certificate of Advanced Graduate Study, and the Doctor of Philosophy degree in Biology, Chemistry, Economics, English, Mathematics, Physics, Psychology, and Sociology.

Boston-Bouv 

Master of Science with specializations in Physical Education and Recreation and Leisure Studies. Graduate courses in Health Education are available as electives within the College and for special students.

Business Administration

Master of Business Administration. There are four methods of securing an M.B.A. degree: full time, internship, part time, and executive MBA study. The full-time student may complete the program in one to two years of academic study. The internship combines fifteen months of academic study with six months of coordinated work as an intern in a business or nonprofit organization for a total program time of 21 months. Part-time students have the advantage of attending classes in the late afternoon and evening to learn the theory behind the practical application of their employment. Full-time students may also apply for an assistantship which combines their studies with academic or administrative experience in the College of Business Administration. Executive MBA students may have their organization's sponsorship to attend classes on alternating Fridays and Saturdays and during three residency weeks over an 18-month calendar period.

Criminal Justice

Both full- and part-time programs are offered leading to a Master of Science degree in Criminal Justice and a Master of Science degree in Forensic Chemistry. Students enrolled in the Master of Science program in Criminal Justice choose among three major concentrations of study—administration and planning; criminology; and correctional counseling. The Master of Science program in Forensic Chemistry provides an integrated survey of forensic science as utilized in criminalistics, toxicology, and related professional fields. An interdisciplinary Ph.D. program in Forensic Chemistry is also offered with specialization in either (a) Forensic Toxicology, (b) Forensic Materials Science, or (c) Forensic Analytical Chemistry. A distinctive feature of the programs is that students have the advantage of attending classes in the late afternoons and evenings.

Education

The Master of Education degree may be earned with specialization in Counseling, Curriculum and Instruction, Early Childhood Education, Educational Ad-

ministration, Educational Research, Human Development, Rehabilitation Administration, Special Education, and Speech Pathology and Audiology. The Certificate of Advanced Graduate Study is offered in Counselor Education, Educational Administration, Rehabilitation Administration, and Special Education Administration. The Doctor of Education degree may be earned in Administration, with specialization in school, rehabilitation, special education, college and cooperative education.

Engineering

The Master of Science degree may be earned with specification in the fields of Chemical, Civil, Electrical, Industrial, Mechanical Engineering, and Engineering Management, including a six-year program in Power Systems Engineering leading to both bachelor's and master's degrees in Electrical Engineering; a special five-year honors program in Mechanical, Industrial, and Electrical Engineering leading to both bachelor's and master's degrees; the Professional Engineer degree in Mechanical, Industrial, and Electrical Engineering; the Doctor of Engineering degree in Chemical Engineering; and Ph.D. degree in the fields of Electrical, Chemical, Civil and Mechanical Engineering. A special interdisciplinary program leading to the Master of Science in Transportation is also offered.

Law

The School of Law offers a full-time program of professional instruction, leading to the degree of Juris Doctor (J.D.). There is no program for part-time or evening students.

The School of Law is the only law school in the U.S. based on the Cooperative Plan. It is a full-time, three-year, day program and is accredited by the American Bar Association and the Association of American Law Schools.

After completing the first-year curriculum, each student must obtain full-time professional jobs with a private firm, a government agency, a legal service organization or a corporate law department. Students alternate work experience and academic quarters and complete their legal education in three years. Because the law school operates twelve months a year, each student normally graduates with the accepted academic requirements (7 quarters) together with a full-year (4 quarters) work experience.

Pharmacy and Allied Health Professions

The Master of Science degree is offered in Hospital Pharmacy, Medical Laboratory Science, Clinical Chemistry, Medicinal Chemistry, Pharmacology, and Radiopharmaceutical Science. The Ph.D. degree is offered in Biomedical Science with specialization in Biopharmaceutics, Clinical Chemistry, Medicinal Chemistry, Medical Laboratory Science, Pharmacology, and Radiopharmaceutical Science. An *interdisciplinary* doctoral degree is available in Forensic Chemistry. A new graduate program in clinical pharmacy leading to the Doctor of Pharmacy (Pharm.D.) is scheduled to commence in the fall of 1980.

Professional Accounting

Master of Science in Professional Accounting. The concentrated 15-month program is designed for liberal arts and other nonaccounting majors who anticipate careers in professional accounting, and wish to prepare for the CPA examination. The five-quarter course includes a three-month internship with a leading CPA firm in the middle or winter quarter, thus providing both practical experience and significant financial support.

New classes start in mid-June of every year.

Some of these programs are offered on the Cooperative Plan; others provide teaching and research fellowships for able candidates.

The Bureau of Business Research

The Bureau of Business Research offers administrative assistance to research projects carried out under faculty leadership and supervision and is an integral part of the College of Business Administration.

The Center For Management Development

The Center, which is sponsored by the College of Business Administration, offers programs designed to provide opportunities for professional growth for middle and senior managers. Two programs are scheduled three times per year: the Management Development Program (MDP), and the Management Workshop. In both, participants are sponsored by their employers. The Center also designs and conducts special programs for a wide range of business organizations.

The MDP is a graduate-level course in business for managers who have already had responsibility for a major task, function, department, division, or independent enterprise. Six weeks of in-residence instruction are extended over a several-month period, October to February; January to May; or March to June.

The Management Workshop offers a comprehensive outline of the major areas of business through graduate-level courses in organizational behavior, financial analysis and control, operations management, marketing, and economic forecasting. It meets for 12 consecutive Fridays, beginning in September, January, and March (437-3273).



The Center for Continuing Education

The Center for Continuing Education serves the community in a variety of ways. Programs range from public offerings of enrichment courses to State of the Art seminars in all engineering concentrations; from workshops in nursing and other health professions to a comprehensive program in graphic arts management and food preparation; from special concentration seminars developed for a particular client company to the nationally known Urban Mass Transportation Management Seminars conducted by Northeastern University in conjunction with the United States Department of Transportation.

The Center also offers three fully accredited programs in allied health: the Dental Assistant Program, the Medical Laboratory Assistant Program, and the Radiologic Technology Program.

Insurance Institute

The Insurance Institute is sponsored by local insurance organizations and companies. It offers a number of noncredit courses in preparation for the Chartered Life Underwriter and Chartered Property-Casualty Underwriter designations, as well as for the General Insurance, Insurance Adjuster, and Risk Management Certificates. Telephone: 617-437-2506.

Part Three

Particulars of Education



Undergraduate Admissions

139 Richards Hall

To find a college or university that will suit one's needs and interests—a place where one can learn to feel at home and make sound preparation for a future career—is a goal of all students who plan to continue their education beyond secondary school. This can be achieved in a number of ways, such as talking with enrolled students, faculty and alumni, and by reading catalogs. A visit to a college campus should be high on one's list of priorities. The Committee on Admissions extends a cordial welcome to all prospective students and has planned a series of on-campus experiences to make a visit as worthwhile as possible.

The Admissions Conference

It is only natural that students should have many questions about Northeastern—its programs of study, its services to students, and the Co-operative Plan of Education. For this reason, the Committee on Admissions sponsors a series of Orientation Conferences for students. Offered at 10:00 a.m. and 2:00 p.m. on Mondays and Fridays from October 1 through May 1 (except for legal holidays), these conferences have been most successful in helping students become better acquainted with the University. An audio-visual presentation is shown with comments by an admissions counselor. This is followed by an informal question-and-answer period.

Special group sessions are also held in the summer between July 1 and September 1. Further information about these summer conferences may be obtained from the Admissions Department.

Guided Tours

Guided tours of the campus are usually held daily, Monday through Friday, at 11:00 a.m. and 3:00 p.m. The admissions conference and the tour should both be scheduled in advance by writing or calling the undergraduate Admissions Office (617-437-2211). The opportunity to visit the University's facilities and to observe student life on campus is one important way to learn about Northeastern. Commuting students who wish to visit the University's Suburban Campus in Burlington are encouraged to do so. This will appeal especially to those whose home communities are on the North Shore of Boston.

The Interview

Although it is not required, a personal interview is generally regarded as an appropriate time for students with special questions to meet with an admissions counselor. In studying the secondary school record, the counselor may discover some factor which merits further explanation. In this event, the applicant may be asked to arrange a visit to the Admissions Office. The interview, therefore, may be held at the request of the student or the counselor. In most cases, contacts with admissions personnel will be more beneficial if the *University Bulletin* has been carefully studied before the personal interview.

Special Note

Northeastern does not hold classes for students in the Basic Colleges on Saturdays; hence, guided tours cannot be provided at that time. A weekday visit to

the University is recommended. Special Saturday appointments are arranged on a limited basis, however.

General Requirements for Entrance

An applicant for admission to Northeastern University has, ideally, completed a secondary school program that challenged his ability—a program that includes courses in English, foreign language, mathematics, laboratory science, and history. Proficiency in a foreign language is especially important for students entering the College of Arts and Sciences. But the overall school record has importance in itself, both as an indication of achievement in subjects critical to university study and as a reflection of a wise choice of electives. Candidates are encouraged to broaden their reading outside of class. The student who can communicate ideas, understand the meaning of words, and write effectively is at a distinct advantage. Most important, the high school transcript should provide clear evidence of sound study habits so vital to success in higher education.

Today's high school students have had the advantage of many innovations that have greatly enriched their experience—independent study, small group seminars, research projects, and off-campus experiences related to community service or future vocations. Northeastern is understandably interested in the growth of the work/study concept in many secondary schools, and the Committee on Admissions looks with favor upon the variety of these worthwhile experiences.

The University has also introduced flexibility into its programs so that students may explore alternate fields or tailor their programs to personal goals. Although they may be asked to indicate a major for the purpose of having faculty or co-op advisers assigned to assist them, candidates for admission to the Colleges of Business Administration, Engineering, Arts and Sciences, or Education do not have to make a definite choice of major until the end of the sophomore year. Elective courses are available to freshmen in some programs.

Obviously, attendance at a University means the opportunity to change a program of study, in many cases without loss of credit, as new interests develop. The possibilities can be discussed with a counselor in the Office of the Dean of Students during the freshman year.

Preparation for Study in Engineering, Science and Mathematics and Allied Health Professions

It is only natural that evidence of special aptitude and the highest possible level of preparation in the sciences and mathematics should be required for entrance to certain programs of study offered by the University. Such programs include:

Boston-Bouvé College

School and Community
Health Education
Physical Education
Physical Therapy

College of Education

The Teaching of Secondary
Science/Mathematics and
Speech and Hearing

College of Engineering

All programs

College of Arts and Sciences

Biology, Chemistry, Geology,
Mathematics, Physics

College of Nursing

B.S. program

College of Pharmacy and Allied Health Professions

All programs

Lincoln College

B.E.T. Degree program

Courses in science and mathematics vary greatly in terminology, teaching methods, and content. Applicants are encouraged, however, to complete the full sequence of such courses if possible. Experience has shown that students in programs emphasizing mathematics and science need courses in the social sciences and humanities to be fully prepared for professional courses.

Preparation for Study in Business Administration

Candidates for admission must have successfully completed a strong preparatory program in high school. Pragmatically, the College aims to offer men and women the opportunity to become educated to a level of competence in their respective fields, thus enabling them to choose between an immediate professional career or graduate school. While mathematics plays an important role in the total program, strong emphasis is also placed on liberal studies to effect an intellectual balance with liberal and appreciative courses.

Preparation for Study in the Social Sciences, Teaching, and Criminal Justice

Many candidates for admission have enjoyed their greatest success in areas other than mathematics-science. Their interests lie quite naturally in the study of the humanities and social sciences. Thus such a student may choose to apply for admission to one of the following programs:

Boston-Bouvé College—(Recreation and Leisure Studies)

The major in Recreation and Leisure Studies is developed from a broad liberal arts foundation. Students may select an emphasis in Community Recreation, Outdoor Education and Conservation, or Therapeutic Recreation for work with the retarded, the handicapped, or the aging.

College of Criminal Justice

By its very nature, the program in Criminal Justice requires a strong base of liberal arts study before professional courses are introduced. Applicants for admission should therefore demonstrate an ability to succeed in their study of the behavioral, social, and human services.

College of Education

Professional courses leading to the opportunity for teacher certification are based upon a strong foundation of liberal arts study in the humanities and social sciences. Elementary Education majors may focus on any one of six areas, including preprofessional Special Education and Early Childhood Education. Secondary Education majors typically choose among English, Modern Languages, Social Studies, Human Services, and Music Education. (An audition is part of the admissions procedure for Music Education candidates.)

College of Arts and Sciences

Broad and flexible programs are offered to meet a variety of student interests in African-American Studies, Art History, Drama, Economics, English, History, Human Services, Journalism, Modern Languages, Music, Philosophy, Political Science, Public Administration, Psychology, Sociology-Anthropology and Speech Communication. A wide selection of electives enables students to broaden horizons while developing depth in the field of their major.

Entrance Examinations (Freshmen)

Research clearly indicates that the best single predictor of college academic success is achievement in secondary school. Thus, this factor, together with the

recommendations of the school counselor, weighs most heavily in the evaluation process. Although the Scholastic Aptitude Test and three Achievement Tests of the College Board are required, the Committee on Admissions does recognize that these test results do not measure such qualities as determination, imagination, and leadership.

The College Board will offer the twenty-minute writing sample as part of the December English Composition Test. Applicants are encouraged to complete the sample since it will be used to assist in assigning students to appropriate freshman English sections. Students whose native tongue is not English may substitute the Test of English as a Foreign Language (TOEFL) for the English Composition Test. Two other achievement tests are required in subjects in which the student feels most confident. No single schedule of testing is recommended, but applicants are advised not to take subject matter tests unless they are currently studying such subjects.

For full information about College Board Examinations, consult a school guidance counselor or write directly to:

*The College Board
Post Office Box 592
Princeton, New Jersey 08540
or
Post Office Box 1025
Berkeley, California 94701*

The American College Testing Program may be substituted for the College Board Testing Program.

For full information, write to:

*American College Testing Program
P.O. Box 168
Iowa City, Iowa 52240*

Admissions counselors will also be glad to answer questions about these testing programs.

Advanced Placement

The University grants advanced placement credit to those students with a score of 3 or better in their Advanced Placement Examinations. Such students are excused from the basic courses in Art History, Classics, Modern Languages, English, History, Chemistry, Mathematics, Music, Biology, and Physics and in the advanced courses in languages to which the Examinations apply. They receive full credit for those courses from which they are excused.

Applicants are required to write the Advanced Placement Tests of the College Board in May.

College-Level Examination Program

The University cooperates with the College Entrance Examination Board in its CLEP Program. CLEP provides a national program of five General Examinations and forty-seven Subject Examinations to evaluate nontraditional college-level education. Qualified students are encouraged to write the general and/or subject matter examinations of CLEP, with the result that college credit may be allowed upon entrance. In general, the Committee on Admissions accepts the score range recommendations of the College Board. Northeastern University has been designated a CLEP Testing Center. Inquiries may be addressed to Counseling and Testing Center, Room 302, Carl S. Eli Student Center Building.

Applying for Admission and Plans of Admission

Entry Dates

Northeastern University admits students to all programs in September and also has a January entrance date for most of its programs. In addition, certain freshmen and transfer students may enter in the April and June quarters.

The application should be filled out properly, signed, and forwarded to the Dean of Admissions, Northeastern University, Boston, Massachusetts 02115. There is a \$20.00 application fee. Checks should be made payable to Northeastern University. This fee may be waived in cases of extreme hardship, endorsed by the candidate's secondary school counselor or social worker. It is to the student's advantage to submit his application for admission promptly. *The student is also responsible for making sure that his transcript and College Board scores are submitted to the University.*

Rolling Admission Plan

Under Northeastern's Rolling Admission Plan, candidates may be notified of their acceptance at that point in their secondary school careers when there is sufficient evidence that they will be able to profit from study at the university level. This may occur early in the senior year or after the results of College Board Examinations have been evaluated. In all cases of acceptance, candidates are to complete successfully the senior year of high school.

Students should note that enrollments are limited in some programs where the number of applications is expected to exceed campus resources.

Deferred Admissions Plan

An increasing number of students seek information about deferring admission, perhaps to travel, or to improve their financial resources through employment before entering college. Accepted students who wish to participate in the Deferred Admissions Plan will be asked to describe the activities they plan for the coming year before enrollment. Information on the Plan is available from the Admissions Department.

Early Admission—Juniors, Second-Semester Seniors

In certain cases, students may enroll at Northeastern prior to high school graduation. Such students may enroll at Northeastern either in September or January, thereby reducing the time to complete degree requirements by one year. A special form provided by the Admissions Committee requires the endorsement of the school principal or guidance counselor for early admission. Write to the Department of Admissions for further details.

Alternative Freshman-Year Program

Northeastern University designed this program for students who want to go to college but whose high school performance was not their best.

If, for any reason, you feel that your grades do not reflect your abilities and you would still like to attempt to pursue a college career, the Alternative Freshman-Year Program may be the answer. It could assist you in making the academic and social adjustment needed for success in college.

This program was developed in collaboration with University College, a division of Northeastern serving students who seek a flexible college program. Under the supervision of Northeastern's full-time faculties, University College offers longer classes meeting fewer times a week than those classes following the standard pattern. You may come to the University two or three times a week instead of four or five times, an advantage if you work or have other responsibilities making it difficult to attend a traditional college.

As a member of the Alternative Freshman-Year Program, you are a regular Northeastern University day student. The full range of counseling services, physical education facilities, dormitory arrangements, and extracurricular programs is available to you.

Working with counselors who advise you throughout the program, you share in planning your own schedule. All students begin with at least ten quarter hours of credit in the first academic quarter. Most accelerate their program as they move from quarter to quarter.

After completing at least forty hours of credit, you may continue your degree program within University College, or you may have the opportunity to transfer with sophomore status to one of the following Basic Colleges: Business Administration, Criminal Justice, or Social Science/Humanities majors in the Colleges of Education and Arts and Sciences.

Programs for Minority Group Students

Northeastern University deliberately seeks to expand educational opportunities for deserving minority group students and to recruit promising students from economically and culturally disadvantaged backgrounds. In so doing, it has increased its guidance and other supporting services in order that such students may be assured the opportunity to succeed in their chosen fields of study. Supporting services include tutorial study and programmed instruction. These and other counseling services are provided by the University's African-American Institute.

Project Ujima Program

"Ujima" is Swahili for "collective work and responsibility." The purpose of Northeastern's Project Ujima is to assist minority group students in developing their potential to the fullest extent.

This program is designed to help make students aware of their potential and to urge them to strive forward with direction and purpose. Special programs such as minicourses, counseling seminars, tutorials, and training sessions are provided to meet the needs of high-risk students.

Open Campus Courses

Under Northeastern University's Open Campus Plan, qualified high school students who can gain release from their schools are invited to undertake collegiate study at Northeastern for credit while still enrolled in secondary school. In this way, students are able to gain a better idea of the collegiate situation while they work toward college credit. For further information, write to the *Admissions Department*.

Cooperative Freshman-Year Program

College of Engineering Each June, the College of Engineering admits a certain number of students under a special Cooperative Freshman-Year Program.

Students may enter Northeastern University in the June following completion of their senior or junior years and complete Quarter One of their freshman year from June to September.

Graduating seniors then continue their freshman academic program or undertake a cooperative work assignment. This first cooperative work assignment normally occurs either in the Winter Quarter (January to March) or in the Spring Quarter (April to June). Under special circumstances, and at the discretion of the faculty coordinator, freshmen may be placed in September, following completion of their first academic quarter. After this work assignment, the student will return to Northeastern and complete the freshman year. This schedule will be based upon the professional judgment of the Cooperative Education Department and the academic progress of the student.

By extending the freshman year, enrollees have the opportunity to defray a considerable portion of their first-year expenses.

Juniors have the option of returning to their secondary schools following the summer term with credits earned toward a college degree or staying on at Northeastern, with the permission of their secondary schools, as members of the freshman class. If the students remain at Northeastern, they then have the opportunity to participate in a cooperative work assignment similar to those held by graduating seniors, either in the Fall or Winter quarters. For additional information, write to the Admissions Department.

Orientation and Registration

The orientation and registration program, which begins with your arrival in September, officially launches your academic career at Northeastern.

The administration, faculty, and many upper-division students have planned several days of programs, faculty seminars, meetings and special events designed to help you adapt to college life in general and Northeastern University in particular.

In addition to regular registration operations, receiving class schedules and book purchases, you will meet with the dean and faculty members of your college who will provide information concerning your planned academic major, courses and career goals.

You will have the opportunity to attend "How to Study" seminars, peer-counseling sessions and many other informative events. The Department of Cooperative Education has planned meetings regarding job opportunities and school-work experiences.

You will be introduced to members of more than 130 student organizations, some of which you might choose to join as a student. Guided tours of Boston's historical and cultural centers are available.

Freshmen students are assigned to classes based on their choice of college and major, high school record and a variety of placement tests. These tests are taken during the orientation and registration program.

Skill and Competency Development

Responding to the apparent growing national need of many otherwise academically acceptable college freshmen to improve their basic skills in the writing, numerical, and reading/study areas, the University extends to freshmen in several of its participating Colleges the opportunity to enhance the likelihood of their academic success as freshmen through voluntary enrollment in compensatory, i.e. development, courses.

Selection for such course work is based upon the correlation of competency data derived from specially prepared testing procedures administered during Orientation Week along with pre-freshman academic credentials.

The freshman writing sequence, the mathematics sequence, and the reading/study skills course, each bear full credit in participating Colleges.

Instructors, freshman advisers, and the Freshman Affairs Staff of the Dean of Students Office are ready to assist involved freshmen in achieving success in their endeavors.

Special Students

A limited number of special students may be admitted to the Basic Colleges. Special students are not degree candidates, and must meet criteria set by the college.

Those admitted as special students usually have completed some college-level work. Applicants who may be considered are:

- a college or university graduate who needs additional course work to prepare or qualify for a graduate program;
- individuals, recommended by deans or program directors, who need particular formal course work to meet professional requirements for certification;
- students who need several courses to complete degree requirements at another college or university, provided they have written approval from the dean of their college; others who are recommended by deans of the colleges to take courses leading to regular admission. In such cases, however, special student enrollment should be limited to one academic quarter.

All special students will be charged a nonrefundable application fee of \$20. Before obtaining and paying for an application, the potential special student should consult a counselor in the office of the dean of the college offering the course(s) desired. Tuition will be at the quarter-hour rate in effect at the time and must be paid before registration is valid. Special students will be admitted to classes only when there is space available.

All special students must obtain approval from the office of the dean of a Basic College prior to each quarter's registration, but will be required to pay the application fee only once.

They should contact the dean of the college in which they wish to enroll.

Foreign Students

Foreign students are required to complete and file the regular undergraduate application at least six months before registration. They must meet all admission requirements including the standardized tests administered by the College Entrance Examination Board. All academic credentials should be translated into English before forwarding them to the Department of Admissions. After notification of acceptance, students must pay the required deposits and complete the University's Declaration and Certification of Finances Form by the date specified on their acceptance certificate before an I-20 Form can be forwarded.

This School is authorized under Federal law to enroll nonimmigrant alien students.

Students may obtain a copy of the Foreign Student Admissions Booklet by writing to the Department of Admissions.

English as a Second Language

Before being considered for admission, students whose native language is not English are required to demonstrate English language proficiency. This can be done by obtaining a score of 450 or better on the College Board's Test of English as a Foreign Language (TOEFL) exam or by successfully completing an approved English language course of study.

After acceptance, students whose native language is not English will be required to complete the University's English Language Center's placement test. The results of this test will be used to assign students to their English course. Students with minimal English language skills will be assigned to the non-credit Intensive English Course. The level of course work in English will determine the student's academic schedule.

Admission of Transfer Students

A student wishing to transfer into the Basic Colleges of Northeastern University may request advanced standing as an upperclassman on the basis of acceptable credits earned in an accredited two- or four-year institution or a technical institute.

Basic Requirements

Full details of the University's transfer policy are available in the Transfer Booklet. This publication will be mailed to you upon request. Following are the basic requirements:

1. Only a candidate who presents satisfactory college records may be considered for advanced-standing credit.
2. Credit is generally given toward a Northeastern degree for any reasonably equivalent course completed with a satisfactory grade at another accredited institution.
3. Candidates must be in good standing and eligible to continue in the institution they are currently attending.
4. Evidence of honorable dismissal is required.

Application Procedure

Complete an application for admission no later than July 1 if September entrance is planned. In certain programs, enrollment is possible at the beginning of each Northeastern quarter of study.

Submit a high school transcript. Request that an official transcript from each college attended be sent. This should include a list of courses which will be completed prior to the end of the academic year.

NOTE: Transfer students are not required to complete entrance examinations.

Required Deposits from Freshmen and Transfer Students

If the Committee on Admissions makes a favorable decision on students' applications, they will be asked to submit a nonreturnable tuition deposit of \$100 by May 1. This deposit serves as an indication of intent to enroll and is applied to their first-quarter tuition account. A dormitory deposit of \$100 is due at the same time for resident students.

Students applying for entrance other than in September should carefully read their certificate of acceptance which will indicate their required deposit dates.

General and Special Health Requirements

Prior to registration at Northeastern, each applicant must submit a complete medical history and physical examination on a Student Health Service Form which will be sent to each student upon acceptance. This will include a tuberculin test performed within six months of the admission date. This information must be forwarded to the University physician for review. Proper health clearance is considered a condition of admission.

Except in the most extreme instances, neither physical nor emotional problems are considered a bar to admission. In fact, we are actively encouraging handicapped students to become part of the University community. With pertinent information, we can usually make the adjustments to college life smoother and supply special aids when needed.

Sound health and physical fitness are especially important for students in the Boston-Bouvé College and the College of Nursing and is required by their nonuniversity affiliations. Candidates for admission to these Colleges are therefore required to receive special health clearance prior to enrollment. A repeat health examination, by University Health Services, is given in the third year for physical therapy students in Boston-Bouvé College and before the third and fifth years for students in the College of Nursing.



College Expenses

Students are advised that tuition rates, room and board charges, and fees are subject to revision by the Board of Trustees at any time. They should also note that the freshman year consists of three quarters of full-time study. The Co-operative Plan, whereby students may be gainfully employed, does not begin until the sophomore year.

The primary purpose of the Cooperative Plan is to provide invaluable on-the-job training, but it can make education possible without the accumulation of a large personal debt. Because of the Plan—and the University's determination to keep basic expenses as low as possible—many deserving students who might not otherwise be able to afford an education have attended Northeastern.

Expenses for the Freshman Year (Three Quarters)

Tuition for the freshman year is \$3,135.00. For those who enroll in September, the tuition is payable in three installments at the beginning of the fall, winter, and spring quarters. For those who enroll in January, payments are due at the beginning of the winter, spring, and summer quarters.

Board and room expenses for those living in University-sponsored residence facilities vary slightly according to the dormitory to which a student may have been assigned. These costs are also paid in three installments at the beginning of each quarter, and are on a seven-day-a-week arrangement.

Total Freshman Expenses

Application Fee	\$ 20.00
Tuition	3,135.00
Board and Room (if applicable)	2,475.00†
Student Center Fee	37.50†
Infirmary Fee (if applicable)	75.00†
Health Services Fee	160.00
ROTC Deposit (if applicable)	25.00
(for uniform, equipment, etc.)	
Laboratory Deposit (if applicable)	20.00
(\$5.00 charge for extra cards)	

The above list excludes personal expenses and amounts for books and supplies which total, on the average, \$150 to \$175.

† Payable in three installments at the beginning of each freshman quarter: September 24, 1979; January 2, 1980; and March 31, 1980. For students who enroll in January, the dates would be January 2, 1980; March 31, 1980; and June 23, 1980.

* This scale is for Speare and Stetson Halls. See Housing section, page 217.

Special Note

Nonrefundable deposits of \$100 for tuition and \$100 for board and room are payable not later than May 1. These deposits are applied to the first-quarter costs. The board and room deposit serves to reserve a space in a University dormitory.

Students who enroll in September will usually have a vacation period of 13 weeks between the freshman and sophomore years. Generally, Northeastern students use this period to earn money toward tuition costs.

Northeastern University is a member of the National Association of College Admissions Counselors, and the University supports and adheres to the admissions and financial aid policies of the Association's "Statement of Principles of Good Practice."

Expenses for Upperclassmen

	Tuition for Bouv�, Business Administration, Nursing, Pharmacy	Tuition for other Colleges except Engin.	Tuition for Engin.
<i>Division A</i>			
September 24, 1979	\$1,412.50	\$1,402.50	\$1,445.00
March 31, 1980	1,412.50	1,402.50	1,445.00
<i>Division B</i>			
January 2, 1980	1,412.50	1,402.50	1,445.00
June 23, 1980	1,412.50	1,402.50	1,455.00
<i>*Division C</i>			
September 24, 1979			
March 31, 1980	1,412.50	1,402.50	1,445.00
June 23, 1980	1,412.50	1,402.50	1,445.00

* *Division C is the term used to denote the classification of students who are temporarily or permanently on a noncooperative academic year. Certain students in the College of Arts and Sciences may select a noncooperative four-year program. In other colleges, this program is temporary; sometimes required of transfer students to phase into the Cooperative Plan.*

Required Fees for All Students

Application Fee

A fee of \$20 is required when the application for admission is filed. This fee is nonreturnable.

Accident and Sickness Insurance

The University provides an excellent hospital insurance and student health program. All students will pay a nonrefundable University Health Service fee of \$160 per year. This fee will cover the group Blue Cross-Blue Shield program and the medical services which are provided to students by the University Health Service.

Student Center Fee

All students in the Basic Colleges on the Huntington Avenue campus are charged a fee of \$12.50 per quarter for the services available in the Student Center building.

Graduation Fee

A fee of \$25 covering graduation is required by the University of all candidates for a degree. This fee must be paid before the end of the fifth week of the last scholastic quarter in the senior year. Candidates in the College of Nursing are required also to pay a charge of about \$10 for their graduation pin.

Boston-Bouvé College Uniforms

Students in the Physical Therapy program are required to purchase a uniform for physical therapy procedures and physical education; the cost is approximately \$20. The cost of required clinic uniforms for the senior year is approximately \$100.

College of Nursing Uniforms

Students in the Baccalaureate Degree Program purchase uniforms in the fall quarter of the sophomore year.

College of Pharmacy and Allied Health Professions Uniforms

Students in Respiratory Therapy purchase uniforms in the spring quarter of the freshman year.

Students in Dental Hygiene purchase uniforms in the fall quarter of the freshman year.

Students in Radiologic Technology purchase uniforms in the fall quarter of the freshman year.

Students in the Medical Laboratory Science programs purchase laboratory coats in the spring quarter of the freshman year. Co-op assignments to hospitals will usually require uniform purchase in the spring or summer quarter of the sophomore year.

Other Fees

International Student Fee

There is a one-time fee of \$200.00 charged to new, undergraduate international students, payable upon their acceptance at Northeastern.

Liability Insurance

Freshmen majoring in the Colleges of Nursing (Bachelor Degree Program, Special Program for R.N.s, and L.P.N. Associate Degree Program) and Allied Health (Respiratory Therapy), as well as all upper-class students in Boston-Bouv , Nursing, Pharmacy and Allied Health Professions excluding Health Records, are required to carry liability insurance. A fee of \$13.00 is charged per year.

Payment of Tuition

All payments should be made at the Bursar's Office. Checks should be made payable to Northeastern University. Beginning with the second week of any quarter, students are not eligible to attend classes unless their tuition has been paid or specific arrangements have been made with the Bursar for a plan of deferred payment. Deferred payment of tuition entails a fee of \$5.

Late Payment Fee

A fee of \$25 will be assessed for failure to make, or arrange for, payments in accordance with the prescribed regulations.

Laboratory Deposits

Students taking laboratory courses should be prepared to purchase laboratory deposit cards from the Bursar as directed by the department offering the course. These deposits will be charged with deductions for breakage and destruction of apparatus in the laboratory. A charge of \$5 each is made for extra cards.

Reserve Officers' Training Corps—Uniform Deposit

Freshmen enrolling in ROTC make a deposit of \$25 to cover loss of, or damage to, ROTC uniforms and equipment. Any loss or damage exceeding the deposit will be charged to the student.

General

Engineering students should expect to pay approximately \$50 for drawing instruments and equipment. *Students in the College of Nursing* may expect to be assessed fees for clinical laboratory experiences. *Students in Education* pay a fee of \$701.25 for student teaching. *Physical Education* majors pay a room and board charge for a resident program at the Warren Center in the spring quarter. *Recreation Education* students pay \$170 for the cost of a two-week term of camping at the Warren Center. A one-week session in winter sports is optional for Recreation Education majors in their junior or senior year (at a cost of \$100), and a one-week session in skiing for middlers or juniors in *Physical Education* (at \$100).

Refunds

The University provides all instruction on an academic quarter basis for which students pay at the beginning of each quarter. Tuition refunds in all schools and colleges may be granted through the first four weeks of a quarter, only when specific conditions are met and on the basis of the date appearing on the official withdrawal application. (Nonattendance does not constitute official withdrawal.) Questions regarding refunds should be discussed with the Dean of Students' Office. When approved, refunds are made as follows:

Tuition Refund

Official Withdrawal Filed Within	Percentage of Tuition
1st week of Quarter	100
2nd week of Quarter	75
3rd week of Quarter	50
4th week of Quarter	25

Room and Board

Rental charges for rooms in University accommodations are refundable only in cases of withdrawal prior to the start of a quarter (except in special circumstances so adjudged by the University). The \$100.00 deposit is not refundable. Board charges may be refunded for all unused portions when the food identification card is surrendered to the Office of the Dean of Students for Housing.

Overloads

Tuition covers the cost of each student's required courses for a quarter. In addition, a course worth one quarter hour of credit may be taken without added charge. However, any other additional courses will be billed as overloads to the students taking them.

Financial Aid

Financial assistance in the form of loans, grants, and work-study is available on an annual basis to qualified students. Undergraduate financial aid funds are administered in accordance with a nationally established policy and philosophy of financial aid for students pursuing a degree in higher education. It is a basic premise of this policy that parents have an obligation to pay for the education of their children to the extent that they are able to do so. Financial aid is available only for meeting the difference between the students' potential resources, (e.g., parents' contribution, summer or co-op earnings, outside agency awards, etc.), and their annual educational costs. The parents' contribution is determined by an objective analysis of the family's financial state: net income, number of dependents, allowable expenses, indebtedness, and assets. Criteria established by the College Scholarship Service are used in making the evaluation.

The University does not award any form of financial assistance to students who are not citizens or permanent residents of the United States.

Application Procedure

(Freshman Year) Applicants seeking financial assistance for the freshman year are required to submit a copy of the Financial Aid Form (FAF) to the College Scholarship Service by February 15. This form is available from secondary school guidance offices or the Office of Financial Aid.

On the FAF you must apply for the Basic Educational Opportunity Grant Program; this is the floor program of financial aid. Check with your state scholarship program, as it may also use the FAF for application to its programs. All applicants for aid are advised to apply to their state scholarship program. Substantial state aid is offered by Massachusetts, Connecticut, New Jersey, Pennsylvania, Rhode Island, and Vermont. Investigate your state aid programs.

Awards are announced in late March for applicants who file before February 15. The awards take the form of a "package," combining scholarship, grant, loan, and work-study employment. Awards may be adjusted at any time upon receipt of other funds or changes in financial status.

See information concerning State Scholarships and the Federal Basic Educational Opportunity Grant.

(Transfer Students) In addition to the requirements described for the freshmen year, transfer students who are applying for financial aid must also complete a transfer student application and have a copy of their financial aid transcripts sent to the Office of Financial Aid from any postsecondary school previously attended.

Application Procedure

(Sophomore—Senior) Applicants seeking financial assistance are required to submit an FAF form to the College Scholarship Service each year they apply for assistance. Upperclass applicants are also required to submit one "Upperclass Application for Financial Aid" in each of their upperclass years and file for the Basic Educational Opportunity Grant and submit the results of that application to the Office of Financial Aid as soon as possible.

Financial aid awards are usually made for the entire academic year, and the application should be filed prior to the following deadlines:

Fall	April 15
Winter	August 15
Spring	November 15
Summer	January 15

See information concerning State Scholarships and the Federal Basic Educational Opportunity Grant.

Eligibility and Selection

In order to be eligible to participate in the financial aid programs at Northeastern University, all students must: a) apply for financial aid, completing the proper application forms and submitting them in a timely fashion; b) ascertain financial need; c) be in attendance at Northeastern University pursuing a first academic degree on at least a half-time basis in an eligible program; d) be making normal academic progress as determined by the college in which you are enrolled; e) meet any other eligibility requirements of the individual aid programs.

Northeastern University makes every effort to meet the full apparent need for aid from applicants. Selection of applicants for awards is based on the following criteria: highest need and high academic achievement, or potential for academic achievement. Aid is granted on the basis of availability of program funds.

Most students who attend Northeastern University move along with their class. On request, information about retention and attrition can be obtained from the Office of the Dean of Students.

Inquiries

Office of Financial Aid
254 Richards Hall
360 Huntington Avenue
Boston, MA 02115

Office Hours

8:30 a.m. to 4:30 p.m. Monday-Friday

Telephone: 617-437-3190

State Scholarship Programs

The Office of Financial Aid strongly advises applicants for aid to apply to state scholarship programs at the same time that they apply for aid from the University.

The Commonwealth of Massachusetts may provide scholarship aid to Massachusetts students pursuing full-time day programs of study in an accredited college or university. Awards are made in the summer of each year, and applications for entering freshmen are available through their high school guidance office. Out-of-state students should investigate aid programs in their respective states also. Substantial state aid is offered by Connecticut, New Jersey, Pennsylvania, and Rhode Island.

Federal Programs

Please note that aid granted from programs funded by the federal government is dependent upon the amount of funds allocated to Northeastern University.

Basic Educational Opportunity Grant

This is a program of direct federal grants to college students. Eligible students could receive as much as \$1,800 per year toward their cost of education. Basic Grants are generally available to all students who have not previously received a bachelor's degree and who are not in this country on a student visa and are attending on at least a half-time basis. To utilize this program to the fullest as a base for a financial aid package, all students applying for aid must have evidence of application to this program.

Application for the B.E.O.G. Program can be made with the Financial Aid Form (FAF). Applications for only the B.E.O.G. Program are available at local high schools, public libraries, and other locations easily accessible to students. If unavailable at these locations, write to Basic Grants, P.O. Box 84, Washington, D.C. 20044.

College Work-Study Program

This is a program of part-time employment under the sponsorship of the federal government. It is designed to help full-time undergraduate students meet their educational expenses. Students may work part-time while attending classes up to twenty hours per week. Eligible students may work for the University or for public or private nonprofit off-campus agencies. The Office of Financial Aid has the responsibility of placing qualified students in their job assignments.

Supplementary Educational Opportunity Grant

This is a program of direct awards sponsored by the federal government. They are available to a limited number of full-time undergraduate students who show evidence of having exceptional financial need and academic promise. Eligible students who are accepted for entrance may receive Supplemental Educational Opportunity Grants ranging from \$200 to \$1,500 for each year of undergraduate education up to a maximum period of four years or its equivalent. The federal government requires that a Supplementary Educational Opportunity Grant (S.E.O.G.) be matched by a grant, loan, or part-time employment, which must be accepted by the student, if the S.E.O.G. portion of the award is to stand. Aid over and above the matching portion may be accepted or declined at the discretion of the recipient.

Guaranteed Student Loan Program

Under this program, students who are matriculated degree candidates, enrolled for at least one-half the normal academic work load, may borrow from a participating bank or other financial institution. Terms and conditions vary from state to state, but a student generally may borrow up to \$2,000 a year (the law allows a maximum of \$2,500 per year) depending on financial need. The federal government pays the interest while the student is in school.

Applications for the loan itself are available from local banks or the Education Office of your state government. Additional information and necessary application forms for Massachusetts residents are available from the Financial Aid Office.

Health Professions Loan

This program is available to full-time undergraduate students who have been accepted for a course of study leading to a Bachelor of Science degree in Pharmacy. A student who evidences financial need and academic promise may borrow as much as \$2,500 per academic year. Repayment of principal and interest does not begin until one year after the student ceases to pursue a full-time course of study. Repayment of principal may be extended over a 10-year period with interest at the rate of 7% per annum.

Law Enforcement Loan

This program is available to full-time students in a course of study leading to a Bachelor of Science degree in an area directly related to law enforcement. The applicants must show evidence of financial need and intend to pursue full-time employment in a law enforcement agency of a state or local government upon completion of their studies. The maximum loan is \$2,200 per academic year with no repayment of principal or interest beginning until six months after the student ceases to pursue a full-time course of study. Repayment of principal may be extended over a 10-year period with the interest at the rate of 7% per annum. Repayment may be deferred up to a maximum of four years while a borrower is serving in the armed forces.

Cancellation of up to 100% of the loan at the rate of 25% per annum may be allowed for each complete year of full-time employment in a public law enforcement agency.

National Direct Student Loan

This program is available to students who show evidence of financial need. Undergraduate students may borrow as much as \$1,500 each academic year up to a maximum of \$5,000 for their entire undergraduate education. Repayment and interest on these loans do not begin until nine months after the student ceases to carry at least a half-time academic load at an institution of higher education. The repayment of principal may be extended over a 10-year period with the interest at the rate of 3% per annum. Repayment may be deferred up to a total of three years while a borrower is serving as a Peace Corps or VISTA volunteer.

Borrowers who choose to teach the disadvantaged or handicapped may qualify for cancellation of their entire obligation over a seven-year period. Borrowers serving as full-time members of the Armed Services of the United States are entitled to cancel 12½% per annum of the principal outstanding on any loans for each year of such service up to a maximum cancellation of 25%.

Nursing Student Loan

This program is designed for full-time undergraduate students who have been accepted for a course of study leading to an Associate or Bachelor of Science degree in Nursing. Provided financial need is evident, students may borrow as much as \$1,500 each year up to a maximum amount of \$6,000 for their entire undergraduate education. Repayment and interest on these loans do not begin until nine months after the student ceases to pursue a full-time course of study. The repayment of the principal may be extended over a 10-year period with the interest at the rate of 3% per annum.

Cancellation of up to 50% of the loan at the rate of 10% per year may be allowed for borrowers employed as professional nurses in any public (private) nonprofit institution in an area having a substantial shortage of nurses.

Reserve Officers' Training Corps Scholarship Program

(Refer to section on Reserve Officers' Training Corps.)

University Scholarships

The following scholarships are awarded through the Office of Financial Aid. Students should not apply for any specific scholarship, as we award specific scholarships to the student who qualifies. If you feel you are a potential recipient for any of these listed awards, you may bring that fact to our attention.

The Vivian B. Allen Scholarships Nursing

The Vivian B. Allen Foundation Endowment for nursing scholarships was established in 1968 through the generosity of the Vivian B. Allen Foundation, Inc. The income from a

\$500,000 endowment fund is to be used to provide scholarship assistance for students entering or enrolled in the College of Nursing of Northeastern University. The application procedures and qualifications for selection are the same as those for all other scholarships.

Alumni Scholarships All Colleges

Scholarship aid is available to entering freshmen who are relatives of alumni. Applicants must show evidence of scholastic achievement and financial need.

Irving Aronson Scholarship

Engineering

The Irving Aronson Scholarship for Electrical Engineering students was established through the generosity of the family of Irving Aronson, as a living memorial to a man who shared his life with so many people and who cared so much for the educational process. Income from this fund will be awarded or loaned to electrical engineering students who demonstrate financial need and academic responsibility.

Badger Company, Inc.

Grant Program Engineering

The Badger Company, Inc., has made available to Northeastern University two grants of \$1,500 each to be given to first-year students. Recipients must be from secondary schools in the Greater Boston area and have been accepted into the College of Engineering. Summer employment may be available to the recipient(s) of the grant during the summer before their matriculation at the University. Cooperative work will be offered as long as positions are available during their undergraduate years.

George L. Barnes Scholarship

All Colleges

This fund was established in 1969 by Miriam P. Poole, daughter of George L. Barnes, in memory of her father, a distinguished member of the Northeastern University Corporation and Board of Trustees from 1937 until his death in 1965.

The income from this fund will annually provide a full scholarship to a deserving student from Weymouth, Massachusetts. The award is made on the basis of need and character. Some additional assistance may be given in the upper-class years.

The Henry Francis Barrows

Scholarships All Colleges

Established in 1949, the four Henry Francis Barrows Scholarships, provided under the will of Fanny B. Reed, are offered to Protestant young men, born and brought up in New England. Good scholastic standing, good character, and need must be demonstrated by recipients of the scholarships.

The Barry Scholarship

Engineering

The Barry Scholarship, established in 1973 by the Barry Division of Barry Wright Corporation, is available to students in the College of Engineering. Preference will be given to mechanical engineering majors, and sons and daughters of Barry employees, based upon demonstrable financial need and academic achievement.

The Mr. and Mrs. Emil

Matthew Bauer Fund

All Colleges

The interest from the Fund, established in 1954, is used for scholarships or other financial assistance to students of German birth or of German extraction studying at Northeastern University. The scholarships are available to either men or women students enrolled in any year at the University.

Martin Brown Scholarship

Fund Engineering

This scholarship was established in 1961 by Mr. Martin Brown, an engineering alumnus of the Class of 1921. Its purpose is to assist qualified students enrolled in the College of Engineering who have need and have demonstrated above-average scholastic ability.

**Burroughs Corporation
Scholarship Program**

All Colleges

Two awards of \$1,000 are made each year to assist talented students, in their junior, senior or graduate years of study, whose goals are related to a career in the data processing industry.

The Burroughs Corporation Scholar will be provided the opportunity to work in the Summer Internship program. This job provides not just additional funds for educational purposes, but also a work experience directly related to the student's career objectives.

Wellington Burnham Fund

All Colleges

This fund provides financial assistance to worthy students of limited means without discrimination as to race, creed, color, or scholastic attainment. It was established in 1961 under the provisions of the will of George A. Burnham.

**The Godfrey L. Cabot Scholarship
Fund**

All Colleges

This fund was established by Dr. Cabot in 1954 to help meet the college expenses of employees or children of employees of Godfrey L. Cabot, Inc., and its subsidiary and associated companies. To be eligible, the employee must have completed at least five years of service to the company prior to the time the student enters the University. The University shall determine the number and amount of these scholarships, which are not limited to outstanding students and which are available to evening as well as day students. Students interested in applying for scholarship aid from this fund should communicate with the Cabot Personnel Office or the Office of Financial Aid at Northeastern University.

**The Camp, Dresser and McKee
Scholarship**

All Colleges

This Scholarship was established in 1973 by Camp, Dresser and McKee, Inc., and is available to students in all colleges. Preference will be given based upon demonstrable financial need and academic achievement.

**Louis S. Cashman Memorial
Scholarship Fund**

Business Administration

Established by the Massachusetts CUNA Credit Union Association and friends of Mr. Cashman in recognition of his outstanding service to the credit union movement in the Commonwealth of Massachusetts.

This scholarship is awarded annually to students in the College of Business Administration who have need, with particular preference given to those enrolled in Banking and Finance.

**The Gardner A. Caverly
Scholarship**

All Colleges

This scholarship was established in 1957 through the generosity of Mr. Gardner A. Caverly, an alumnus of the College of Business Administration and a member of the Class of 1934. Its purpose is to provide financial assistance and encourage qualified students from the New England area to attend Northeastern University. In selecting worthy students for these scholarship awards, preference is given to graduates of the Rutland, Vermont; and Laconia, New Hampshire high schools.

Carl W. Christiansen Scholarship

Business Administration

The Carl W. Christiansen Scholarship Fund was established in 1976 by Mr. Carl W. Christiansen, a graduate of the School of Commerce and Finance, Providence Division of Northeastern University, Class of 1923. Early in his career, Mr. Christiansen was an accounting instructor and associate dean in the Providence Division. In 1927, the accounting firm of Christiansen, Murphy and Company was founded, and in 1940, it became known as Christiansen and Company-Certified Public Accountants. The income from this fund is to be awarded annually to an entering freshman in the day College of Business Administration who has demonstrated the necessity for financial aid. Preference will be given to students from the state of Rhode Island interested in pursuing a career in accounting.

Ruby H. Cole Scholarship
Fund All Colleges

The Ruby H. Cole Scholarship Fund was established in 1973 under the will of Mrs. Cole, late of Boston, Massachusetts. The income from the fund is awarded annually to one or more female students enrolled in or admitted to undergraduate programs of the Basic Colleges of the University and who are graduates of Roxbury High School, Roxbury, Massachusetts. Recipients must demonstrate financial need, academic stability and soundness of character.

Community Scholarships
All Colleges

The Community Scholarships were established by President Asa S. Knowles during the period 1963-1973. These scholarships stipulate that Northeastern will ensure that full freshman tuition be met in the form of scholarships and grants for qualified students.

In order to qualify for consideration, a student must apply for financial assistance through the normal application procedure and demonstrate need.

The following Massachusetts communities are designated under this scholarship program:

Boston: three scholarships at each of the several high schools; **Ashland:** three scholarships; **Burlington:** three scholarships; **Weston:** three scholarships; **Framingham:** two scholarships; **Weymouth:** two scholarships; **Haverhill:** two scholarships; **Revere:** two scholarships; **Norwood:** two scholarships; and **Brookline:** three scholarships.

The Compugraphic Corporation
Scholarship Fund All Colleges

The Compugraphic Corporation Scholarship Fund has been established and endowed at the University with a generous gift from an individual. The income from the scholarship fund is to be used annually as financial assistance for persons who are admitted to or enrolled in full-time undergraduate programs of the Basic Colleges of the University and who demonstrate financial need, academic stability and soundness of character. Scholarships are tuition grants and are awarded to persons who are otherwise eligible and who are, at the time of the grant, children of current employees of Compugraphic Corporation.

Richard Cardinal Cushing
Scholarship All Colleges

The Richard Cardinal Cushing Scholarship was established in 1978 through the generosity of the Massachusetts Committee of Catholics, Protestants, and Jews. The income from the scholarship's endowment will be awarded annually to a Catholic, Protestant, and Jewish student who embody the principles of brotherhood and justice and, through their work on campus, have become positive forces for religious understanding.

The Salvatore J. and
Corinne Danca Scholarship

The Salvatore J. and Corinne Danca Scholarship, established in 1974 by Salvatore J. Danca, a graduate of Northeastern University, Class of 1934, is to be awarded annually to a student enrolled as a sophomore. Selection will be made by the Committee on Scholarships using academic excellence and financial need as the criterion for selection.

Elizabeth A. Davey Scholarship
for Physical Therapy
Boston-Bouvé

The Elizabeth A. Davey Scholarship for Physical Therapy students was established through the generosity of the family and friends at Choate Memorial Hospital on behalf of Elizabeth A. Davey, as a living memorial to a woman who shared her life with so many people. Income from this fund will be awarded or loaned to a Physical Therapy senior who demonstrates superior academic achievement and financial need.

Charles M. Devlin
Scholarship All Colleges

This fund was established in 1976 by the members of the Class of 1970 "in honor of our dedicated adviser," Charles M. Devlin. The income from the fund will be awarded annually to upperclassmen with proven ability and demonstrable financial need. Preference will be given to children of members of the Class of 1970.

**The William O. DiPietro
Scholarship** Engineering

This scholarship was established in 1967 through the generosity of Mr. William O. DiPietro, a distinguished alumnus of the College of Engineering and a member of the Class of 1942. The scholarship is awarded annually to one or more deserving freshmen who demonstrate a high caliber of achievement and a desire to fulfill the limits of their ability in both academic and cooperative periods of study. In considering recipients for this scholarship, preference is given to freshmen enrolled in the College of Engineering who have a desire to major in Chemical Engineering. It is intended that those students receiving awards from this scholarship might someday contribute to this or other scholarships themselves, thereby perpetuating growing funds that will help other deserving individuals.

**The Diamond Anniversary
Development Program
Scholarship** All Colleges

This scholarship has been established to commemorate the successful conclusion of the Diamond Anniversary Development Program. This Scholarship Fund recognizes the loyalty and generosity of the thousands of alumni and friends, corporations, foundations, and organizations whose significant contributions of time and resources have brought Northeastern University to "that greatness which is its destiny."

Three \$1,000 scholarships are awarded annually, as follows: to one or more full-time students enrolled in a cooperative education program within a basic college of the University; to one or more part-time students enrolled in a basic college of the University; and to one or more full-time students enrolled in the graduate division or a professional school of the University. Consideration will be based upon financial need, academic stability, and soundness of character.

**The Harry Doebla Memorial
Scholarship** All Colleges

The Harry Doebla Memorial Scholarship was established in 1974 in memory of Mr. Harry Doebla, founder and president of Doebla Greeting Cards, Inc. During his lifetime Mr. Doebla provided much financial assistance to young people of limited means to help them in furthering their educational goals.

The awards from this fund are available to undergraduate day students with preference being given to graduates of Fitchburg High School, Fitchburg, Massachusetts; and Nashua High School, Nashua, New Hampshire. Additional consideration will be given to children of employees of Doebla Greeting Cards, Inc.

**The Cpl. James B. Downey USMC
Scholarship Fund** All Colleges

This scholarship was established in 1970 through the generosity of Mr. William J. Downey, a graduate of the College of Liberal Arts, Class of 1952, in memory of his brother, Cpl. James B. Downey, USMC. The scholarship is to be awarded annually to an upper-classman in the day colleges who has demonstrated the necessity for financial aid.

**Agnes F. Driscoll Scholarship
Fund** All Colleges

This fund will provide scholarship assistance to students in their upperclass years who have demonstrated financial need and scholastic attainment.

**Carl Stephens Ell Alumni
Scholarships** All Colleges

To honor Dr. Carl Stephens Ell, the second president of Northeastern University, the Alumni Association established these scholarships in 1958. Either freshmen or upper-classmen enrolled at the University are eligible. Awards will be made to worthy students on the basis of scholastic ability and need. The scholarships are to be distributed as equitably as possible among students in the Basic Colleges and University College. Preference shall be given to sons and daughters of Northeastern Alumni.

**Elmer H. and Daisy M. Everett
Memorial Scholarship**

All Colleges

This Scholarship was established through a bequest of Elmer H. and Daisy M. Everett,

both alumni of Northeastern University. Mr. Everett graduated from the College of Engineering, and Mrs. Everett graduated from the School of Business. They are both members of the Class of 1934. Mr. and Mrs. Everett had the strong conviction to help young people wanting to further their education. The fund will be administered by the Office of Financial Aid.

**The George Raymond Fennell
Memorial Scholarships**

Business Administration

Two full-tuition scholarships are awarded each year to first-year students enrolled in the College of Business Administration. The scholarships are awarded in memory of George Raymond Fennell, formerly Assistant Director of Admissions and Director of the Northeastern Student Union.

**Alfred J. and Laura M. Ferretti
Scholarship**

Engineering

This scholarship was established in 1978 by Professor Alfred J. Ferretti, who retired in 1961 after 43 years of service to Northeastern University. It honors the memory of Mrs. Ferretti and is to benefit worthy undergraduate students who are majoring in Mechanical Engineering. Recipients should demonstrate financial need, high academic achievement by maintaining a minimum average of 3.0, and should be of sound character.

**Clara and Joseph F. Ford
Scholarship Fund**

All Colleges

A fund established by Clara and Joseph F. Ford to provide tuition scholarships for worthy, needy, and well-qualified students who have demonstrated a democratic and tolerant spirit and who are well disposed toward people of all creeds and races.

**The Nathan Gerber
Memorial Scholarship**

All Colleges

The Nathan Gerber Memorial Scholarship was established in 1974 by Albert Gerber, E52; and Robert Gerber, E60 in memory of their father, Nathan, a member of the Class of 1925. The scholarship is to be awarded annually to a student or students enrolled in the freshman class with a demonstrable financial need. Selection is made by the Committee on Scholarships.

The Foster Grant Scholarship

All Colleges

This scholarship, established in 1974 by the Foster Grant Co., Inc. of Leominster, Massachusetts, is available to students in any of the full-time undergraduate colleges. Preference will be given to children of employees of Foster Grant Co., Inc. Basis for the award will be demonstrable financial need and above-average academic achievement.

**Clifton W. Gregg Memorial
Scholarship**

All Colleges

This scholarship was established through a bequest of Clifton W. Gregg, a 1915 graduate of the School of Commerce and Finance of Northeastern University. It was Mr. Gregg's request that "the income from this fund be used for the assistance of financially needy students." The award may be made annually. Recipients will be determined by the Committee on Scholarships.

**Rabbi Myer O. Grunberg
Scholarship**

All Colleges

Established in 1953 by Mrs. Myer O. and Miss Rose Grunberg, this annual award is available to a senior student in any college of the University. The award is made to students who have evidenced in personal, business, and student relations those characteristics of leadership and human relations which make for a better social order. There is no restriction as to race, creed, color or sex.

**Charles Hayden Memorial
Scholarships**

All Colleges

The Charles Hayden Foundation, created by the will of the late Charles Hayden, an alumnus of the Boston English High School, offers annual memorial scholarships to freshmen at Northeastern University. The scholarships are awarded to "deserving boys" whose parents are unable to finance the entire cost of their education.

**Richard Melvin Horwitz
Memorial Award for Excellence
in Electrical Engineering**
Engineering

The Richard Melvin Horwitz Memorial Award for Excellence in Electrical Engineering was established in 1967 by Leonard J. Horwitz in memory of his brother, Richard Melvin Horwitz, a member of the Class of 1945 in the College of Engineering who died in action during World War II. The award recognizes academic achievement and excellence and is presented annually to an outstanding undergraduate senior majoring in Electrical Engineering.

**The Walter F. Howe
Memorial Scholarship**
Business Administration

This fund was established in memory of Walter F. Howe, Class of 1968, who within one week after graduation was fatally wounded, living up to his ideals of good citizenship and civic responsibility. Walter was tragically slain while pursuing thieves who had stolen his landlord's car. The scholarship was established through the generosity of Walter's friends and relatives and is awarded annually to a student in the College of Business Administration who demonstrates not only financial need but good citizenship and civic responsibility. The scholarship is open-ended so that additional sums can be added to it in future years and will be awarded by the University without restrictions as to race, color, geographic origin, or scholastic attainment.

**The Edward L. Hurtig
Scholarships** All Colleges

This scholarship was established in 1968 through the generosity of the Hurtig family in memory of Edward L. Hurtig, an alumnus of the College of Engineering, Class of 1946. The scholarship is awarded annually to an entering freshman in the day colleges who has demonstrated the necessity for financial aid. Preferences will be given to recipients of the Educational Opportunity Grants Scholarship Program of the United States Office of Education.

**The Maurice A. and Nellie L.
Idelson Award** All Colleges

This award, established in 1968, is given annually to an entering freshman in the day colleges who has demonstrated the need for financial aid. Preference will be given to graduates of the Boston English High School. Should there be no qualified candidate from this source, the award will then be given to any worthy student.

**Joseph Anthony Johnson
Scholarships** Engineering

Established in 1968 by the will of the late Joseph Anthony (Johansen) Johnson of the Class of 1928, the income provides scholarship aid for students enrolled in the Department of Mechanical Engineering, with preference given to students of Scandinavian origin.

**Dr. LeRoy C. Keagle Memorial
Scholarships Fund** Pharmacy

The Dr. LeRoy C. Keagle Memorial Scholarship Fund was established in 1975 through the generosity of family and friends of Dr. LeRoy C. Keagle, a man of high integrity and commitment to the profession of pharmacy who, at the time of his death on December 15, 1974, was Dean of the College of Pharmacy and Allied Health Professions at Northeastern University. The income from this scholarship fund is awarded annually to a student in the undergraduate Pharmacy Program who is entering the junior or senior class. Recipients must demonstrate financial need, academic stability, and soundness of character.

**The Martin Luther King, Jr.
Scholarship**

The Martin Luther King, Jr. Scholarship is granted annually to incoming freshmen, graduate, and transfer minority students who have demonstrated the philosophy of peaceful coexistence and change through nonviolent means espoused by Dr. King, and who have

an above-average scholastic record. The scholarship, in the amount of \$500, requires a minimum grade point average. Financial aid based on need is available to supplement the scholarship.

**Vena Morse Lamson
Scholarships** All Colleges

These scholarships are provided through the income of a fund established in 1963 by Horatio W. Lamson in memory of his beloved wife. They are awarded annually to needy and worthy students who are enrolled in any of the Basic Colleges of the University. The scholarships are granted by the Committee on Financial Aid of the University without regard to national origin, sex, race, or creed.

**George M. and Irene M. Lane
Scholarship Fund**
All Colleges

This Scholarship Fund was established in 1979 by the family of Dr. George M. Lane to honor his memory. Dr. Lane's faithful and dedicated service to Northeastern University extended from 1943 to 1975, at which time he retired as Director of University Health Services. The income from the George M. and Irene M. Lane Scholarship Fund is awarded annually to an upperclass member of the University's Varsity Football or Hockey Team who demonstrates financial need, academic stability, and soundness of character. Additional family gifts as well as contributions from friends and associates may be added to the Scholarship's endowment.

**The Irving Landfield
Scholarship** All Colleges

This fund was established in 1972 through the generosity of Irving Landfield, a graduate of the School of Commerce and Finance of Northeastern University, Class of 1923. The income from the fund is to be awarded annually to help deserving and needy students who demonstrate a desire to fulfill the limits of their ability in academic and cooperative periods of study. The income from this fund will be administered and awarded by the University without restriction as to race, color, creed, geographic origin, or scholastic attainment. It is Mr. Landfield's desire that recipients of the scholarship assume a moral obligation to contribute to the principal of this fund as they may be able, in order to make additional financial aid available for other students in later years.

**Avrom Aaron Leve Memorial
Scholarship** Psychology

This scholarship fund was established in 1957 in memory of Dr. Avrom Aaron Leve, former Assistant Professor of Psychology. The interest is used annually to provide scholarships for upperclass students majoring in Psychology. The award is made on the basis of academic achievement, financial need, and character.

**Russell T. Lowe Memorial
Scholarship Fund**
College of Engineering

This fund was established in 1976 in memory of Russell T. Lowe, a graduate of the College of Engineering, Class of 1953. The endowment funds were provided by the friends and associates of Russell Lowe and the Barry Wright Corporation, where he served as a member of the Board of Directors and as president of the Industrial and Aero Products Group. The income from the fund will be awarded annually to one or more upperclass students enrolled in the College of Engineering. Preference will be given to Mechanical Engineering majors based upon demonstrable financial need and above-average scholastic achievement.

**Dr. Reuben J. Margolin
Memorial Scholarship Fund**
Education

The Dr. Reuben J. Margolin Memorial Scholarship Fund was established in 1973 through the generosity of family and friends of Dr. Reuben J. Margolin, an outstanding and dedicated individual and friend who, at the time of his death on April 6, 1972, was Chairman of the Department of Rehabilitation and Special Education at Northeastern University.

The income from the Dr. Reuben J. Margolin Memorial Scholarship Fund is awarded annually to a deserving student admitted to or enrolled in the College of Education or the Graduate School of Education and majoring in Rehabilitation and/or Special Education. Recipients must demonstrate financial need as well as the personal and professional qualities exemplified by Dr. Margolin.

**James G. Martin Memorial
Scholarship** Nursing

The James G. Martin Memorial Scholarship was established in 1978 to financially assist deserving upperclass students enrolled within the College of Nursing. Annually, five scholarships of \$750 each will be awarded to deserving students who demonstrate financial need and academic stability.

**George T. Marvin
Scholarship Fund**
All Colleges

This fund was established in 1961 under the provisions of the will of George T. Marvin, a graduate of the Northeastern University School of Law, Class of 1918. Mr. Marvin designated that the income of this fund should be used to provide financial assistance to worthy and needy students to assist them in furthering their education at Northeastern University.

George T. Marvin Scholarships may be awarded to new students seeking admission to Northeastern and to students enrolled as freshmen and upperclassmen. Applicants must have satisfactory records of scholarship as of the time of making application and must demonstrate genuine need and good citizenship.

**Merchants Tire Company
Scholarships Fund**
Business Administration

This scholarship was established in 1972 by Merchants Tire Company in honor of Max Katz, a Class of 1917 alumnus of Northeastern and founder and chairman of the board of Merchants Tire Company. The scholarship is awarded annually with selection preference given to a son or a daughter of a current employee of Merchants Tire Company enrolled as a freshman within the College of Business Administration, who demonstrates financial need, soundness of character, and academic stability.

**The Clyde W. Morrison
Scholarship Fund** All Colleges

The Clyde W. Morrison Scholarship was established in 1974 by Clyde W. Morrison, a member of the class of 1942. The scholarship is to be awarded annually to a Braintree resident enrolled as a freshman, with a demonstrable financial need. Selection is made by the Committee on Scholarships.

**Frederick W. Muckenhaupt
Scholarship** All Colleges

This award was established in 1961 by Dr. and Mrs. Carl F. Muckenhaupt in memory of their son, Frederick W. Muckenhaupt, Class of 1959 of the College of Engineering.

The award is to be made annually to a student in good standing, on the basis of need. Preference is given to a student enrolled in the Department of Electrical Engineering.

**Elizabeth A. Neilson
Scholarship** Boston-Bouvé

The Elizabeth A. Neilson Scholarship Fund was established in 1976 in memory of William H. and Anastasia Neilson, exemplars of the profession of health education during their lifetimes. The income from the scholarship fund is awarded annually to a student(s) with the highest scholastic record, majoring in Health Education, who has completed eight quarters of academic study with at least four quarters having been taken at Boston-Bouvé College. The student(s) must typify the philosophy of the health education profession.

**Power Systems Engineering
Grants-in-Aid**
Electrical Engineering

A number of public utilities and power equipment manufacturing companies in the northeastern part of the United States have made available grants-in-aid ranging from

\$1,000 to \$1,800 to assist able freshmen who are planning to undertake the six-year integrated cooperative program in power systems engineering leading to the degrees of Bachelor of Science and Master of Science in Electrical Engineering. These awards are made on the basis of academic achievement in high school; and aptitude for, and interest in, the field of power systems engineering, without regard to financial need.

Candidates for such grants-in-aid should apply to the Dean of Admissions at Northeastern University not later than March 1 of the year in which they wish to enter the College of Engineering.

**The Gay Miller Reese
Memorial Scholarship**

Boston-Bouvé College

The Gay Miller Reese Memorial Scholarship was established in 1971 by Everett Reese, in memory of his wife, and by members of the Class of 1921 at their 50th Reunion in honor of their classmate and Class President, Gay Miller Reese. This scholarship is to be awarded annually to help a well-qualified upperclassman in Boston-Bouvé College acquire the education that could not otherwise be possible. The recipient of this award will be selected by the Committee on Scholarships.

Regional Scholarships

All Colleges

Secondary school students who reside in rural areas of New England, who have demonstrated superior achievement in their studies, and who are strongly endorsed by their principals and guidance counselors, may qualify for a Regional Scholarship. Scholarships range from \$200-\$1,400.

The Myer Riesman Scholarship

Nursing

This fund, established in 1969 in memory of Myer Riesman, is used to provide financial assistance to deserving students in the College of Nursing. Preference is given to those students whose clinical experience is at Beth Israel Hospital.

**Edward T. Rigney
Scholarship**

All Colleges

A fund was established in 1978 by a grant from the Trans-Sonics Foundation in memory of Edward T. Rigney, member of the Class of 1941 and co-founder of Trans-Sonics, Inc. Income is awarded annually to a student showing financial need and promise of success in his/her chosen field, and who is enrolled in engineering, science, or science-related studies. The scholarship may be granted to a freshman or upperclassman and may be renewed in succeeding years.

**Frank B. Sanborn
Scholarship Fund**

Engineering

The Frank B. Sanborn Scholarship Fund was established in 1958 to provide a scholarship or scholarships of not more than \$500 to worthy and needy students selected by the University, without restrictions as to race, creed, or geographic origin, but with preference being given to students majoring in Electrical, Mechanical, Civil, or Industrial Engineering, in the order stated.

Recipients must be willing to assume a moral obligation to reimburse the fund as they may be able, to make similar financial aid available for other students in later years. There shall be no interest charged and no time specified for reimbursement.

**Clinton H. Scovell
Scholarships**

Boston-Bouvé

Scholarships are made available annually to men and women students in Boston-Bouvé College through a fund provided by the will of Clinton H. Scovell.

**William Lincoln Smith
Scholarship Fund**

Electrical Engineering

The fund was established in 1947 by Farnham Wheeler Smith, Class of 1924; Benjamin Lincoln Smith, Class of 1923; Thomas Hollis, Jr., Class of 1941; and other members of the family in honor of Dr. William Lincoln Smith, who served long, faithfully, and with distinction as Chairman of the Department of Electrical Engineering at Northeastern University.

The income from the fund is used for an annual scholarship award to a student enrolled in the Department of Electrical Engineering who has demonstrated excellence in some aspect of electrical research, stands high in courses, or otherwise exhibits promise of future competence in the field. The award shall preferably be granted to a student who needs financial assistance to continue college work.

**George A. and Lorraine C.
Snell Scholarship**

All Colleges

This fund was established in 1973 by Mr. George A. Snell, a graduate of the College of Engineering, Class of 1941, and a member of the Northeastern University Corporation and Board of Trustees, and his wife Lorraine C. Snell.

The income from the fund is to be awarded annually to one or more students enrolled in the basic colleges of Northeastern University. Selection will be made by the Committee on Scholarships based upon those candidates who demonstrate financial need, academic stability, and soundness of character.

**John Stuart Sousa, Jr.
Memorial Scholarship Fund**

Pharmacy

This scholarship was established in 1968 in memory of John S. Sousa, Jr., of Fall River, Massachusetts, a student in the College of Pharmacy, Class of 1969, by his family and friends. The scholarship is awarded annually with selection preference given to a male student entering his senior year in the College of Pharmacy and Allied Health Professions who has obtained a cumulative quality point average of 2.300, demonstrates financial need, participates in extracurricular activities, and is preferably a member of a fraternity.

Spofford Scholarship Fund

All Colleges

The Spofford Scholarship is awarded annually to an American Negro, American Indian, or multiracial freshman who demonstrates severe financial need.

**The Stop & Shop
Companies, Inc.,**

Student Loan Fund All Colleges

Established in 1974 by The Stop & Shop Companies, Inc., this Student Loan Fund is a combination endowment and revolving fund to be funded by \$100,000. This generous gift recognizes the contribution, in human terms, made through the years by Northeastern to Stop & Shop, which at the time the Loan Fund was established, counted more than 120 Northeastern men and women in its executive ranks, seven of them vice presidents.

The Loan Fund will assist students who have a substantial investment in their education, but are in need of some financial stimulus to aid them in completing their work.

**The Dr. Ruth E. Sullivan
Memorial Scholarship Fund**

Liberal Arts

This fund was established at Northeastern University in 1976 through the generosity of family, friends, and colleagues of Dr. Sullivan, who was a member of the Department of English from 1968 until her death in 1976. One or more scholarships are awarded annually to undergraduate or graduate students who demonstrate academic achievement and excellence in interdisciplinary studies in liberal arts such as literature and psychology, the field to which Dr. Sullivan contributed so significantly.

**Student Loan Fund—
Health Professions**

Boston-Bouvé,
Nursing, and Pharmacy and
Allied Health Professions

In 1974, a foundation established a perpetual loan fund at Northeastern University to benefit full-time students enrolled as middlers, juniors, and seniors in Boston-Bouvé College, the College of Nursing, and the College of Pharmacy and Allied Health Professions. This Loan Fund will aid those students who have a substantial investment in and commitment to the health professions and who require some financial help to complete their preparation.

**Ruth Page Sweet
Scholarship Fund**

Boston-Bouv 

This fund was established in 1959 by members of the Class of 1919 and alumnae of the Bouv -Boston School in honor of their classmate, Miss Ruth Page Sweet, Dean of Women in the School from 1929 to 1946, Administrative Director from 1946 to 1948, and Director from 1948 to 1958. The scholarship is presented to a junior or senior who has demonstrated a high level of professional promise by their academic record and extracurricular activities.

**A. Gilbert Tenney
Scholarship Fund**

Engineering

This fund is in memory of A. Gilbert Tenney, who served as a captain in the Air Force during the Korean War and was killed while in active service. The income from the fund will be awarded to a needy student or students in the field of electrical engineering, studying under the Cooperative Plan of Education.

**The Earl H. Thomson
Memorial Scholarship**

All Colleges

This fund was established in 1971 to honor the memory of Earl H. Thomson, a distinguished alumnus of the Class of 1925. Mr. Thomson became an internationally known trademark attorney as senior partner in the firm of Thomson and Thomson. A member of the Northeastern Corporation since 1958 and a Trustee of the University since 1960, he also was a Director of The National Council, former President of the Northeastern Alumni Association, and a member of the Board of Directors of Nu Epsilon Zeta fraternity.

The scholarship is awarded annually to one or more deserving and needy students enrolled as freshmen and/or upperclassmen who demonstrate a desire to fulfill the limits of their ability in academic and cooperative periods of study. The scholarship is open ended so that additional sums can be added to it in future years and will be administered and awarded by the University without restrictions as to race, creed, geographic origin, or scholastic attainment. It would be Mr. Thomson's desire that scholarship recipients assume a moral obligation to reimburse this or other scholarship funds as they may be able, in order to make additional financial aid available for other students in later years.

**The Eliot F. Tozer
Memorial Scholarship**

Business Administration
and Engineering

This fund was established in 1972 through the generosity of the members of the Class of 1931 in memory of their faculty adviser, Eliot F. Tozer. The scholarship is awarded annually to students of proven need in the middler, junior, or senior classes of the day Colleges of Engineering or Business Administration. The scholarship is open ended so that additional sums can be added to it in future years. It will be administered and awarded by the University without restrictions as to race, creed, geographic origin, or scholastic attainment.

**Charles Irwin Travelli
Scholarships**

All Colleges

Numerous scholarships have been given yearly since 1950 to students demonstrating financial need, high academic achievement, and an active interest in University life as shown by participation in one or more major activities. Students are named as recipients of Travelli Scholarships at the completion of their sophomore year. Under normal circumstances, these awards will continue through the senior year.

Trustee Scholarships

All Colleges

Established in 1928 by the Board of Trustees of Northeastern University, these full- and partial-tuition scholarships are granted in the Basic Colleges each year to entering freshmen who have demonstrated superior scholastic attainment throughout their preparatory or high school courses.

**Robert E. Turner
Memorial Scholarship Fund**
Business Administration

This scholarship fund was established in 1978 through the generosity of family, friends, and colleagues in memory of Robert E. Turner, a 1952 graduate of Northeastern's College of Business Administration who was associated with the University for 18 years. The income from this fund is awarded annually to assist a College of Business Administration undergraduate student majoring in accounting who demonstrates financial need, academic stability, and soundness of character.

**Samuel Ulman
Scholarship Fund** All Colleges

This fund was established in 1960 by Mrs. Samuel Ulman in memory of Samuel Ulman, a student at Northeastern University from 1912 to 1915. The purpose of the fund is to provide scholarship assistance to students in good academic standing who have financial need.

University Scholarships
All Colleges

Northeastern University has for many years maintained a scholarship fund for deserving, qualified students. These scholarships are awarded on the basis of need, scholastic standing, and campus citizenship. The recipient of a Northeastern scholarship must be willing to assume a moral obligation to repay the University at some future date.

**Sabestino Volpe
Scholarship Fund**
Engineering

The Sabestino Volpe Scholarship Fund was established in 1972 through the generosity of Mr. Sabestino Volpe, a distinguished alumnus of the College of Engineering and a member of the Class of 1928. The income from the fund is awarded annually as a scholarship to an upperclass student enrolled in the Civil Engineering degree day program within the College of Engineering. Recipients must demonstrate financial need, academic stability, and soundness of character.

Henry E. Warren Scholarships
All Colleges

Established in 1958 by the Warren Benevolent Fund, Inc., the purpose of these scholarships is to encourage students to gain cooperative work experience reinforcing study in their major field.

Scholarship awards in the total amount of \$1,000 are awarded annually without restrictions as to race, creed, or national origin, to upperclass students in fields in which related cooperative work positions are few or poorly paid. The recipients of the scholarship must have demonstrated good scholastic standing, fine character, and financial need.

**The Jacob Wasserman
Scholarship Fund**
Pharmacy

Established in 1966 by his friends in memory of Jacob Wasserman, this fund is to provide scholarship aid to a senior student in the College of Pharmacy and Allied Health Professions. The award will be made annually on the basis of financial need, academic performance, and personal qualities.

Other Scholarships

The following scholarships are funded by outside sources. Traditionally, Northeastern University students have been awarded these funds.

Recommendation for the specific award is made by one of the several college scholarship committees or the departments concerned, in conjunction with the Office of Financial Aid. If you feel you are a potential recipient for any of these awards, bring it, in writing, to the attention of your financial aid counselor.

**Dr. Martin E. Adamo
Scholarship**

Pharmacy

This scholarship of \$100 is given annually by the Boston Association of Retail Druggists in memory of Dr. Martin E. Adamo, the second president of the New England College of Pharmacy.

**American Foundation for
Pharmaceutical Education
Scholarships**

Pharmacy

The Board of Grants of the American Foundation for Pharmaceutical Education provides \$600 to be drawn upon to aid qualified students in the upper three years who are in the upper quarter of their class and who maintain a "B" or higher grade average. It is understood that the students have received or are eligible to receive assistance in an amount at least equal to the grant provided by the Foundation from other University sources in payment of required college expenses. The use of the grant is restricted to the payment of tuition or other required college fees. The recipients are identified as "Scholars of the American Foundation for Pharmaceutical Education."

**The Boston Paper Trades
Association, Inc., Scholarship**

Business Administration

Established in 1966 by the Boston Paper Trades Association, Inc., this is an annual scholarship awarded to a junior or senior who has demonstrated by cooperative work achievement and extracurricular activities, an interest and potential in the field of sales. The recipient must be of high character, have a good academic record, and be able to demonstrate financial need.

**Boston Society of Civil
Engineers Scholarship
In Memory of
Desmond FitzGerald**

Civil Engineering

In 1931, the Boston Society of Civil Engineers established a scholarship in memory of Desmond FitzGerald, a former president of the Society and an eminent hydraulic engineer with a distinguished record of service.

It has been awarded annually since 1931 to an outstanding Northeastern University senior or junior student in the Department of Civil Engineering of the College of Engineering. The presentation is made by the president of the Boston Society of Civil Engineers at the Society's annual meeting in the spring.

**Burroughs Wellcome
Revolving Loan Fund**

Pharmacy

A revolving loan fund was established by the Burroughs Wellcome Pharmacy Education Program to assist deserving pharmacy students in the completion of their education. This fund is established through the assistance of Richard M. Walent, Sheldon Rubin, Fred Matula, Daniel Venuti, and James Harb, members of the National Association of Retail Druggists.

**The William M. Cavanaugh
Memorial Scholarship**

All Colleges

This award, established by the members of the Publicity Club of Boston, is open to men and women of the junior and senior classes who demonstrate talent in the field of communications. The scholarship of \$100 bears the name of the second president of the Publicity Club (1950-1951), who was an able and successful newspaper man.

**Civil Engineering
Department Award**

Civil Engineering

The Civil Engineering Department Award was established by members of that Department to recognize achievement and give financial assistance to a student who has selec-

ted a major in the field of Civil Engineering. This award, in the amount of \$100, is financed by gifts from members of the Civil Engineering Department and is awarded to the recipient at the beginning of the sophomore year.

Consumer Value Stores

Scholarship

Pharmacy

Preference will be given to a student entering the senior year who will be seeking a career in community pharmacy practice. Students who are working or have worked for Consumer Value Stores will be given added consideration. The final selection will be made on the basis of demonstrated financial need, personal qualifications, and a sound academic record. Two \$500 scholarships are offered each year.

Electrical Manufacturers Representatives Club of New

England, Inc., Scholarship

Electrical Engineering

Established in 1958, this scholarship of \$475 is granted to a student or students majoring in Electrical Engineering, without regard to race, creed, or color. To qualify, students must have real financial need and excellent scholastic standing.

Gilman Brothers Inc.

Scholarship

Pharmacy

This scholarship of \$250 is given annually by Gilman Brothers, Inc. to help students further their education in pharmacy.

Massachusetts State Pharmaceutical Association

Scholarship

Pharmacy

This scholarship of \$200, established by the Massachusetts State Pharmaceutical Association, is awarded annually. The recipient must be a resident of Massachusetts.

The Massachusetts State Pharmaceutical Association also awards a number of scholarships of \$100. Applications for these scholarships may be secured from the office of the Association at 11 Beacon Street, Boston.

McKesson and Robbins, Inc.

Scholarship Award

Pharmacy

This award of \$200, given annually by McKesson & Robbins, Inc., is awarded to a worthy student who is in financial need. The award recipient is determined by the College of Pharmacy Scholarship Committee and the Office of Financial Aid.

The New England Paper Merchants, Inc., Scholarship

All Colleges

Established in 1959 by the New England Paper Merchants Association, Inc., this is an annual scholarship awarded to a junior or senior who has demonstrated by cooperative work achievement and extracurricular activities an interest and potential in the field of sales. The recipient must be of high character, be able to demonstrate financial need, and have a good academic record.

Norfolk County Pharmaceutical Association Scholarship

Pharmacy

This scholarship of \$50 is awarded annually to a student who meets the requirements both financially and scholastically and is a resident of one of the member towns covered by the Norfolk County Pharmaceutical Association (Norwood, Dedham, Canton, Walpole, Millis, Needham, Westwood, and Islington, in Massachusetts).

**Connecticut Alumni Rudolf O.
Oberg Scholarships**

Each year the Connecticut Alumni Club awards scholarships to students from the State of Connecticut who have achieved a high academic average in their freshman year and have demonstrated financial need. The scholarships are to be used toward the tuition expense of the sophomore year. These scholarships were established in 1958 to promote Northeastern University among the preparatory schools of Connecticut and, in 1971, were named to honor Rudolf O. Oberg, the former Director of Alumni Relations.

Pilot Freight Carriers Scholarship

Business Administration

The Pilot Freight Carriers Scholarship is awarded annually to an upperclass student of Business Administration who has achieved an outstanding academic record and who is interested in a career in the field of transportation. The amount of this award is \$500.

**The Sidney L. Sholley
Memorial Scholarships**

All Colleges

The Sidney L. Sholley Memorial Scholarships have been established by the Trustees of the Keystone Charitable Foundation in memory of Mr. Sidney L. Sholley, founder and first president of the Keystone group of mutual funds. Two scholarships of \$600 each will be awarded annually to incoming freshmen. Recipients of the scholarships will be known as the Sidney L. Sholley Scholars.

**South Middlesex
Pharmaceutical Association**

Pharmacy

This tuition scholarship of \$100 established in 1960 is awarded annually to a pharmacy student enrolled in the third, fourth, or fifth year who is in good scholastic standing and in financial need, and living in the area covered by the South Middlesex Pharmaceutical Association (Arlington, Belmont, Lexington, and Watertown, Massachusetts). The recipient will be selected by the Scholarship Committee.

**South Shore Pharmaceutical
Association Scholarship**

Pharmacy

The Scholarship Committee of the Association will select a freshman student in June of each year living in the area covered by the South Shore Pharmaceutical Association (Quincy, Braintree, Weymouth, Hull, Randolph, Hingham, Holbrook, and Cohasset, Massachusetts), who will be awarded a \$100 scholarship to be applied to the tuition of the first semester of the sophomore year.

**Springfield Druggists'
Association Scholarship**

Pharmacy

A scholarship of \$100 is offered by the Springfield Druggists' Association. This is to be awarded to a sophomore or junior who maintains the highest average in the Department of Pharmacy, and who is worthy and in need of financial assistance. The Springfield Druggists' Association Scholarship Fund was established in 1956.

Honor Societies and Academic Awards

Honors and Awards

The University encourages the achievement of excellence in scholarship by making monetary awards and chartering honor societies in the various academic disciplines.

Honor Societies

The following honorary societies are chartered in the Colleges:

- The Academy—in the College of Arts and Sciences
- Alpha Phi Sigma—in the College of Criminal Justice
- Alpha Pi Mu—in the College of Engineering, Department of Industrial Engineering
- Beta Alpha Psi—in the College of Business Administration, Accounting concentration
- Beta Gamma Sigma—in the College of Business Administration (Massachusetts Delta Chapter)
- Boston-Bouvé Honor Society—in the College, all Departments
- Chi Epsilon—in the College of Engineering, Department of Civil Engineering
- Delta Phi Alpha—national German honor society
- Eta Kappa Nu—in the College of Engineering, Department of Electrical Engineering (Gamma Beta Chapter)
- Kappa Delta Pi—in the College of Education
- Omega Chi Epsilon—in the College of Engineering, Department of Chemical Engineering
- Phi Alpha Theta—in the College of Arts and Sciences, Department of History (Northeastern Zeta Tau Chapter)
- Phi Kappa Phi—national interdisciplinary honor society
- Phi Sigma—in the College of Arts and Sciences, Department of Biology
- Phi Sigma Iota—in the College of Arts and Sciences, Romance Languages (Iota Zeta Chapter)
- Pi Sigma Alpha—in the College of Arts and Sciences, Department of Political Science (Northeastern Delta Gamma Chapter)
- Pi Tau Sigma—in the College of Engineering, Department of Mechanical Engineering (Northeastern Tau Chapter)
- Rho Chi Society—in the College of Pharmacy and Allied Health Professions (Beta Tau Chapter)
- Sigma Theta Tau—in the College of Nursing
- Sigma Xi—Scientific Research Society of North America
- Tau Alpha Pi—in Lincoln College (national engineering technology honor society)
- Tau Beta Pi—in the College of Engineering (Massachusetts Epsilon Chapter)

Election to the college honorary societies is based primarily upon scholarship, but, before a man or woman is privileged to wear the honorary society insignia, there must be evidence of an integrity of character and an interest in the

extracurricular life of the University. The societies have memberships consisting of the outstanding men and women in the Colleges. Election to an honorary society is the highest honor that can be conferred upon an undergraduate.

Awards for Upperclassmen

University awards are determined by scholastic and citizenship achievement. They are presented by appropriate committees headed by the Dean of Students.

The Academy Award

Arts and Sciences

The Academy, the honor society of the College of Arts and Sciences, offers annually an award of \$100 to the sophomore in the College of Arts and Sciences who, during the previous year as a freshman, made the highest scholastic record.

William Jefferson Alcott, Jr., Award

This award of \$200 was established in 1934 by members of the faculty and other friends to perpetuate the memory of William Jefferson Alcott, Jr., a brilliant member of the Northeastern Department of Mathematics from 1924 until his death in 1933. The award to a senior is made annually from the income of the fund "for outstanding performance, either in the way of unusual excellence in routine work, or in connection with some intellectual activity outside or beyond the requirements of the curriculum."

Alumni Awards for Professional Promise

All Colleges

Established in 1947 by the Alumni Association, these awards are presented annually at an Alumni Association meeting in the spring of the year. The awards are made to the outstanding seniors in each of the Basic Colleges who have demonstrated unusual professional promise through their character traits, scholastic achievement, and cooperative work performance.

The Beta Gamma Sigma Award

Business Administration

"The purpose of this society shall be to encourage and reward scholarship and accomplishment among students of business administration, to promote the advancement of education in the art and science of business, and to foster integrity in the conduct of business operations."

Election to membership in Beta Gamma Sigma is the highest scholastic honor that a student in business administration can win.

The Massachusetts Delta Chapter of Beta Gamma Sigma, the national honorary society of colleges of business administration, offers an annual scholarship of \$100 to the sophomore in the College of Business Administration who, during the previous year as a freshman, made the highest scholastic record.

Boston-Bouvé Honor Society Awards

Boston-Bouvé

The Society offers an annual award of \$100 to the sophomore in Boston-Bouvé College who, during the previous year as a freshman in the College, made the highest scholastic record. Each student voted into the Society receives an engraved certificate at a special Honors Assembly.

Cooperative Education Awards

All Colleges

These awards are presented to seniors in each of the Basic Colleges in recognition of outstanding performance in the Cooperative Education Program, through which they have personified the objectives and ideals of the University. The awards are presented at the Annual Awards Luncheon.

**Sears B. Condit
Honor Awards**

All Colleges

These awards were established in 1940 through the generosity of Sears B. Condit. At Honors Day Convocation, Sears B. Condit Honor Awards are awarded annually to outstanding students in the senior class. Each award carries a stipend, as well as a certificate of achievement.

**Joseph Arthur Coolidge
Achievement Awards**

Physical Sciences

Established in 1977 with funds provided by the will of Joseph A. Coolidge, a distinguished member of the Northeastern University faculty from 1911 to 1954 and Chairman of the Department of Physics from 1912 to 1935, three awards of \$500 each are granted annually to the outstanding sophomore, middler, and junior physical sciences students. These awards are based primarily on distinguished academic achievement, with additional consideration given to soundness of character, participation in extracurricular activities on and off campus, and qualities of leadership. Preference will be given to students majoring in Physics, Mathematics, or other physical sciences.

Director's Award

The Director's Award of \$100 is made annually by the Director of the African-American Institute to the individual judged by the Director to be the most outstanding black senior. The award is based on involvement in African-American Institute programs and scholarship, as well as interaction with the community at large. The award is presented at the Awards and Unity Banquet in June.

Alfred J. Ferretti Award

Engineering

Tau Kappa Chapter of Pi Tau Sigma, the Mechanical Engineering National Honor Fraternity, sponsors an annual award to the sophomore mechanical engineering student at Northeastern having the highest scholastic standing. The award is named in honor of Professor Ferretti, who retired June 30, 1961, after 43 years of service to the University.

**Luis de Flores
Endowment Fund**

All Colleges

This fund was established in 1964 to provide yearly awards to students in recognition of superior ingenuity, irrespective of general academic standing.

**Clara and Joseph F. Ford
Awards**

All Colleges

The Ford Awards are made to students who have shown a democratic and tolerant spirit and who are well disposed toward people of all creeds and races. They are chosen from the senior class, and judged on the basis of their contributions through participation or leadership and their extracurricular organizations. Students must have demonstrated by their actions that they are particularly tolerant and willing to work with and for other people.

**The Gamma Phi Kappa Fraternity
Award Fund**

All Colleges

The Gamma Phi Kappa Fraternity Award Fund, established in 1972 by the Brotherhood and Alumni of Gamma Phi Kappa Fraternity, is awarded to an entering freshman or undergraduate student in any of the Basic College Day Programs at Northeastern University. Preference will be given to students, based upon demonstrable financial need. Brothers of Gamma Phi Kappa Fraternity are not eligible for this award.

**The Harold D. Hodgkinson
Achievement Awards**

All Colleges

Established in 1954, the Harold D. Hodgkinson Achievement Awards of at least \$750 each are granted annually to a senior student in Division A and Division B. The winners of the awards are known as the Hodgkinson Scholars for the year in which they are chosen.

The award is based primarily upon distinguished scholastic achievement with due consideration of character, personality, qualities of leadership, cooperative work experience, military record (if any), and service in voluntary organizations and activities. Student leadership accomplishments and professional potential are evaluated in connection with these criteria.

The Hodgkinson Scholar is chosen by a committee of administrative members of the faculty. An appropriate certificate is presented to each recipient as a permanent record of his/her selection.

Kappa Delta Pi Award

Education

Kappa Delta Pi, the College of Education honor society, offers an annual award of \$100 to the education sophomore who, during the freshman year, achieved the highest scholastic record.

The Lilly Achievement Award

Pharmacy

The Lilly Achievement Award is given to a graduating senior for superior scholastic and professional achievement. Leadership qualities, professional attitudes, and academic performance will be considered in the selection of the individual for this award.

**Julia and Merrill Robert
Lovinger Award**

All Colleges

This annual \$100 award was established in 1960 by William Lovinger for the purpose of giving assistance to a student of acceptable scholastic standing who can demonstrate financial need.

Robert Lubets Award

Business Administration

The award was established in 1953 by the Boston accounting firm of Robert Lubets & Company to recognize outstanding professional development and personal growth by students training for careers in accounting. Two hundred dollars will be awarded to a degree candidate who, at the completion of the junior year, has demonstrated the greatest personal growth and professional development as evidenced by improvement in scholastic achievement accompanied by professional aptitude indicative of future success as an accountant.

**McKesson & Robbins, Inc.,
Scholarship**

Pharmacy

This scholarship of \$200, given annually by McKesson & Robbins, Inc., is awarded to a worthy student in financial need.

**Susan L. Orchard
Memorial Fund**

All Colleges

In 1978, the Susan L. Orchard Memorial Fund was established at Northeastern in memory of Susan L. Orchard, a former University student. Reflecting Susan's interest in improving the quality of life and opportunities for women, the annual income of this fund will be awarded to mothers pursuing their studies at Northeastern who require financial assistance in order for their children to make use of the University's Day Care Center. Recipients will be selected by the Center's Director and Advisory Committee.

**Ruth E. Phalen Memorial
Award Fund**

All Colleges

This fund was established in 1959 by Thomas E. Phalen, Jr., a member of the faculty, in memory of his wife. The income from this fund is used yearly as a cash award to a senior, junior, or middler, preferably in the College of Engineering, who maintains at least a 2.0 academic average, shows outstanding ability in one or more varsity sports, and demonstrates excellent campus citizenship.

The Phi Sigma Society Award

Arts and Sciences

Phi Sigma, honor society in the Department of Biology, offers an annual award of \$50 to the junior or senior majoring in Biology or a related science who demonstrates the greatest research potential. To qualify for the award, the student must be a member of Phi Sigma.

Roland Guyer Porter Memorial Fund

Electrical Engineering

This fund was established in 1953 by colleagues and friends of the late Professor Roland G. Porter, for many years the head of the Department of Electrical Engineering. Interest from the fund provides an annual award to a student in the Department of Electrical Engineering who best exemplifies the qualities of mind and character which Professor Porter did so much to develop in his lifetime.

President's Awards

All Colleges

At the annual Honors Day Convocation, six awards of \$200 each, known as the President's Awards, are presented to the students with the highest records in both divisions of the sophomore, middler, and junior classes.

The William Rand Award

Engineering

The Massachusetts Epsilon Chapter of Tau Beta Pi annually offers an award to the outstanding middler in the College of Engineering. The award is based upon outstanding scholarship, breadth of interest, and contribution to the University. All middleers with a 3.5 average or above are eligible; and the winner is chosen after careful screening and interviews with members of the chapter.

The Mildred A. Reardon Scholarship Award

All Colleges

Delta Pi Alpha Sorority sponsors an annual award of \$100 to a deserving coed in the Basic Colleges. Selection is made by the Dean of Students on the basis of academic standing and other considerations. The award is given in honor of an outstanding alumna of Northeastern and Delta Pi Alpha, whose academic excellence, strength of character, and qualities of leadership have typified the ideal for which the sorority strives.

ROTC Awards

ROTC

Awards totaling \$1,000 are available to ROTC cadets each year. The University offers ten \$50 awards annually—four to sophomores, four to middleers, and two to juniors.

Scabbard and Blade (the cadet officers' honorary society) offers one award annually to middleers. The Pershing Rifles (the basic course honorary society) offers a \$50 award to a sophomore Pershing Rifles cadet.

Academic Achievement Awards are won by each cadet in the top 10 percent of ROTC classes. This award, a wreath, is worn above the right breast pocket of the uniform during the year immediately following the year it is earned. Leadership Achievement Awards, consisting of letters of commendation, are awarded to each cadet in the top 10 percent in leadership potential.

Many medals and trophies are also awarded by other organizations to ROTC cadets for achievements in diverse fields.

Nguzo Saba Award

Two Nguzo Saba Awards are presented each year by the African-American Institute to the black male and female who have proved themselves of invaluable service to the black community of Northeastern University and Boston. The award is in the amount of \$100 and is presented at the Awards and Unity Banquet.

Sigma Theta

Nursing

Sigma Theta, the honor society in the College of Nursing, annually offers an award of \$100 to the sophomore in the College of Nursing who, during the previous year as a freshman, made the highest scholastic record.

**Professor Joseph Spear Fund
for Excellence in Student Activities**

Engineering

This fund was established by the Class of 1923, College of Engineering, in recognition of Professor Spear, their class adviser and mentor. It was through Professor Spear's devotion and concern for the well-being of the students that he developed and promoted student activities at Northeastern University. Professor Spear has been referred to as the "Father of Student Activities." The purpose of this fund is to provide a source of income that can be awarded annually to juniors and seniors who have made outstanding contributions to student activities.

Max Starr Award

Business Administration

The Max Starr Award in Public Accounting was established in 1968 by the Max Starr Foundation to recognize every other year an outstanding member of the junior class in the College of Business Administration preparing for a career in public accounting. The recipient is chosen on the basis of both academic and cooperative work records as well as personal qualities. The student receives awards of \$250 in both the junior and senior years.

Tau Beta Pi Award

Engineering

Massachusetts Epsilon Chapter of Tau Beta Pi Association, national honorary society in engineering, annually offers a scholarship of \$100 to the sophomore in the College of Engineering who, during the previous year as a freshman, made the highest scholastic record.

Housing

Residence Halls

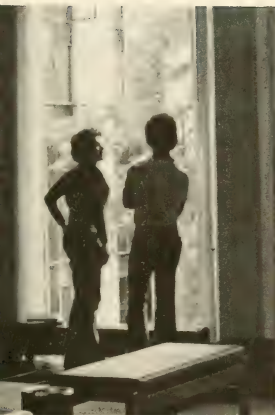
Northeastern University's location, in one of the most central and exciting sections of Boston, offers the student an opportunity to participate in many cultural and educational activities. With residence halls on the Back Bay campus, between the Museum of Fine Arts and Symphony Hall, the city is at your doorstep. Northeastern's library, student center, and athletic facilities are nearby.

Most of the residence halls have lounge areas and recreation rooms, including color television. Privacy and a quiet study environment are encouraged, but students must recognize that residence hall living cannot provide the privacy and quiet they may enjoy in their own homes.

Full- or part-time residence hall staff reside in each residence facility. A natural advantage to residence living may be the increased involvement in social and educational activities. The benefits, as well as the occasional inconveniences of living in a community, contribute to personal growth. Students are encouraged to join the committees that make decisions about student life.

Housing Contracts

Students requesting University housing on their application for admission will receive two housing contracts with their certificate of acceptance: one for their files, and one to be returned with the required \$100 housing deposit to the Office of the Bursar, 245 Richards Hall. Assignments are mailed approximately four weeks prior to registration.



A housing contract for freshmen is for three full quarters. All upperclass transfer students must file contracts and deposits on a term-to-term basis, as each contract is valid for only one quarter at a time. Contracts for summer-quarter freshmen are handled on an individual basis in accordance with the student's academic schedule.

Married and Graduate Housing

No University housing is available for married or graduate students. However, the University does maintain listings of off-campus rooms and apartments. These are available at the Housing Office, 104-106 Eli Building. **Though the Housing Office has agreed to make this listing available, we do not inspect nor endorse the advertised property or space.**

The Selection

The choice of housing is an important consideration for the first year, and freshmen are encouraged to visit Northeastern before making a decision. Tours of residence halls are available by advance arrangement with the Department of Admissions.

Upperclass and transfer students may live in residence halls or apartments. Freshmen are usually assigned to residence halls unless available space exists only in apartments.

Most rooms are designed to accommodate two students; however, some three and four person rooms are available in certain of these facilities. Some residence halls feature "group areas" which house from three to six students in a two- or three-room area.

The University maintains many apartment units for upperclass men and women. These apartments accommodate up to four students. Assignments are made, based on the date of receipt of the housing deposit and contract. Each unit is fully furnished, and the rental charge includes utilities.

Off-Campus Housing

Arrangements for off-campus housing are the responsibility of the student and the student's family. Though the Housing Office, 104-106 Eli, has agreed to make a listing of off-campus housing available, **we do not inspect nor endorse the advertised property or space.**

Fraternity Housing

Certain fraternities provide opportunities for room and board for men at reasonable rates. Information regarding these housing facilities may be obtained from the Dean of Students Office for Housing Affairs, 104-106 Eli, Northeastern University, Boston, MA. 02115.

Cars

Freshmen living in residence halls are not allowed to have cars or other powered vehicles on campus.

Upperclass students are strongly discouraged from bringing cars with them, as the University does not permit overnight parking, and there is a severe shortage of public spaces near the University.

Costs for Room and Board Per Quarter*

Women's Residence Halls

Kerr Hall (upperclass students only)	\$760.00
157-163 Hemenway	\$825.00

Coed Residence Halls

Smith Hall (upperclass students only)	\$760.00
Speare Hall	\$825.00
Stetson Hall, West	\$825.00
White Hall	\$760.00
YMCA (includes cost of single room)	\$785.00
Stetson Hall East	\$825.00
153 Hemenway	\$825.00
115 Hemenway	\$825.00
119 Hemenway	\$825.00

Men's Residence Halls

Melvin Hall	\$760.00
Light Hall	\$760.00

Coed Apartments (Costs do not include Food Card)

106-122 St. Stephen Street	\$485.00
Fairwood—Huntington Avenue	\$445.00
Mark Mngt.—St. Stephen Street/Symphony Road	\$445.00
454 Huntington Avenue	\$445.00
Rubenstein Hall—464 Huntington Ave.	\$485.00
West Apartments—Leon Street	\$525.00

With the exception of the YMCA, all single rooms are charged at an additional rate of \$25. An infirmary fee of \$25 per quarter is charged to resident students.

***Costs and types of residence halls (coed, men, women) are subject to change.**

Security

Security for the residence halls is provided by professionally trained University Police Officers. In addition, residents are required to show appropriate identification to the security proctor when entering the residence hall. Guests, both male and female, must sign in with the proctor.

The University Police provide escort service for students who wish to go from one section of the campus to another late at night.

University Food Service

The University food plan provides for 21 meals per week, and all students who live in University residence halls **are required to participate**. When conditions warrant, such as during weekends and slow periods, the University may close or consolidate certain dining facilities.

Student Activities



The University regards student activities as an integral part of education and provides for a range of activities to arouse your interests and satisfy your inclinations: you are given the opportunity to play intramural sports on a wide variety of teams; write for the *Northeastern News*; broadcast over the student-operated radio station; act, dance, sing, play music; or become involved with student government.

The University encourages relaxation and socializing: you can sit in the Rathskeller any evening or weekend and dance to live music and meet a lot of new friends. We sponsor a lecture series, films and performing arts: listen to speakers such as Tom Wicker, Jesse Jackson or Tom Wolfe. See great new and old films for a dollar in Alumni Auditorium, hear jazz and classical groups, and watch theater, dance and virtuoso performances. Once you begin to take advantage of what is available on campus, there's no telling what you will learn or whom you might meet.

If you are a commuter student, it is likely that a good portion of your between-class time will be spent in the Carl S. Ell Student Center. The dominant feature of the main level of this "student building" is the magnificent main lounge. Five stories in height, the lounge will comfortably seat 800 students—a good place for quiet conversation or contemplation. Below the lounge are a cafeteria and Rathskeller where the sounds are much more audible. In addition, the Center has a ballroom, sidewalk cafe, music practice rooms, a large gameroom with pool and Ping Pong tables, and many meeting and function rooms. The Student Center is that part of Northeastern University where you can relax and really feel comfortable and at home—a sort of "Living Room" of the campus.

Each Monday and Thursday between 11:30 a.m. and 1:30 p.m. are reserved for student activities. No classes are held to conflict with these times, in order to allow students an uninterrupted period to do their thing. Student clubs, intramural sports, cultural events and many other activities are scheduled to provide many opportunities to make spontaneous or planned use of your time. You have the chance to become involved in campus activities, whether you reside in the residence halls or are a commuter, without interfering with your academic commitments.

Special Interest Groups

All University Activities

Radio Station WRBB-FM
Social Council
Student Center Committee
Student Government
Student Union

Artistic Organizations

Creative Council on Black Art
Dance Theatre
Silver Masque

Educational Organizations

Arabic Club
Biology Club
Black Engineering Students Society
Computer Club

Geology Club
Health Careers Club
Hellenic Club
International Students Forum
Medical Laboratory Science Club
Medical Records Student Association
Physics Club
Recreation Education Club
Student American Pharmaceutical Association
Students International Meditation Society
Tactical Society
Together Phi Together

Musical Organizations

Early Music Players
Ethnomusicological Society
N.U. Band
N.U. Chorus
N.U. Orchestra

Political and Social Action Organizations

Chinese Students Club
Clamshell Alliance
Ecology Coalition

Publications

Cauldron
Northeastern News
Spectrum
The Onyx

Recreational Organizations

Chess Club
Fencing Club
Flying Club
Gymnastics Club
Hus-Skiers and Outing Club
Jazz Dance Club
Judo Club
Karate Club
Kung Fu Club
Model Railroad Club
Modern Dance Club
Men's Volleyball Club
Photography Club
Radio Club
Rifle Team
Scabbard and Blade
Soccer Club
Sport Parachute Club
Underwater Society
Table Tennis Club
Yacht Club

New Horizons

This program, sponsored by the Student Activities Department, is designed to provide enjoyment as well as the opportunity to engage in a unique learning experience.

The series of free, noncredit courses is conducted by qualified persons in special areas of interest. There are no grades, no transcripts, and no examinations. In a few courses, textbooks are required; in areas such as the performing arts, contemporary issues, crafts, media, etc., a materials fee or selected readings are required.

Enrollment in courses is determined on a priority basis with first opportunities for registration to full-time undergraduate and graduate students, and on a space-available basis on the last day of registration to other members of the Northeastern community.

Course enrollment is limited by the nature of the subject matter and size of the facility. Registration is on a first-come, first-served basis.

For questions, comments or brochures, call or visit the Office of Student Activities, Room 255 Ell Center; Telephone 617-437-2642.

Fraternities

The twelve recognized fraternities and two colonies play an important role in the extracurricular life of the University. A list of the fraternities and their addresses are as follows:

Alpha Epsilon Pi
360 Huntington Ave.
(255 EC)
Boston, Mass. 02115

Alpha Kappa Sigma
29 Greenough Ave.
Jamaica Pl., Mass. 02130
524-9869

Beta Gamma Epsilon
234 Commonwealth Ave.
Boston, Mass. 02116
262-1639

Delta Chi
430 Centre Street
Jamaica Pl., Mass. 02130
524-5304

Gamma Phi Kappa
11 Vancouver St.
Boston, Mass. 02115
427-8774

Iota Phi Theta
360 Huntington Ave.
(255 EC)
Boston, Mass. 02115

Kappa Alpha Psi
360 Huntington Ave.
(255 EC)
Boston, Mass. 02115

Nu Epsilon Zeta
255 St. Paul St.
Brookline, Mass. 02146
566-9804

Omega Psi Phi
360 Huntington Ave.
(255 EC)
Boston, Mass. 02115

Phi Beta Alpha
6 Cerina Rd.
Jamaica Pl., Mass. 02130
524-9668

Phi Gamma Pi
241 Kent St.
Brookline, Mass. 02146
566-8970

Phi Sigma Kappa
37 Greenough Ave.
Jamaica Pl., Mass. 02130
524-9893

Tau Kappa Epsilon
360 Huntington Ave.
(255 EC)
Boston, Mass. 02115

Zeta Beta Tau
42 Chestnut Square
Jamaica Pl., Mass. 02130
522-5162



Sororities

The two recognized sororities and one colony also play an important role in the extracurricular life of the University. Although none has a separate house, they can all be reached through the Office of Student Activities, Room 255 EC at the University. The sororities are:

Alpha Kappa Alpha
Delta Phi Epsilon
Delta Sigma Theta

Sports

The University provides opportunities for all students to participate in athletic programs that correspond to the abilities and inclinations of most students. We especially wish to provide each of you with a chance to develop skills and competence for lifelong athletic pursuits. Along with many casual, drop-in opportunities are chances for all to participate as members of intramural teams. Examples of intramural opportunities include: touch football, basketball, volleyball, soccer, ice hockey, wrestling, softball, and track.

Professional Societies

Students will benefit in many ways by joining the student chapter of a professional society in an area of study of particular interest to them. They will keep up with latest developments by listening to authorities in that field; they will have an opportunity to exchange ideas with students from other colleges and universities as well as from Northeastern; and they learn more about professional standards.

If students take an active part by attending regular meetings and social affairs, they may become officers or members of a delegation to meetings outside the University. Such participation may prove invaluable in shaping a career.

The following professional societies are open to upperclassmen in their respective professional fields. The majority are national organizations:

Accounting Society (local)
 Alpha Zeta Omega (pharmacy)
 American Chemical Society
 American Finance Association
 American Institute of Chemical Engineers
 American Institute of Industrial Engineers
 American Marketing Association
 American Pharmaceutical Association
 American Society of Civil Engineers
 American Society of Mechanical Engineers
 Council of Professional Engineering Societies
 Institute of Electrical and Electronic Engineers
 National Education Association
 Phi Chi Theta (business administration sorority)
 Sigma Delta Chi (journalism)
 Society of American Military Engineers
 Society of Women Engineers

Photo-Identification Operation

All full-time students, staff and faculty are required to have an officially approved and properly validated photo-identification card. All students are required to show their card at the Library, Athletic Events, Student Elections, Health Services, Bursar's or Registrar's Office, or Public Safety on request.

An official I.D. card will be issued to new students at their initial orientation and registration periods. Replacements for lost cards can be obtained by going FIRST to the Bursar's Office, 248 RI, and then 255 EC, between the hours 11:30 a.m.-2:30 p.m., Monday through Friday, for the photo. A charge of \$1 is levied for the initial ID card; \$5 for a replacement.



Religious Life

Interfaith Chapel services are held in the Bacon Memorial Chapel, located in the Ell Student Center. These voluntary religious services are planned to commemorate special days and events, and will be announced sufficiently ahead of time. The Chapel is also used for denominational worship services and special lectures on religion. It is open daily for prayer and meditation, and is a frequent setting for weddings of students and alumni. The denominational chaplains are available in nearby Chaplains' Rooms.

The Northeastern Interfaith Chaplain's Association, along with the Advisory Committee on University Religious Life, has genuine concern for the religious and moral development of students of all faiths. Although the religious life at Northeastern emphasizes the interfaith and ecumenical spirit, denominational student organizations are given full support on campus. These organizations are officially recognized by the Student Affairs Committee and are listed in the section entitled, "Student Interest Groups." Most of these groups have their chaplains, their officially appointed faculty advisers, and student officers.

Men's Athletics

Whether it be on the astroturf of Parsons Field in the fall, the ice of the Boston Arena in the winter, or the waters of the picturesque Charles River in the spring, a Northeastern athletic team is always competing somewhere.

And that somewhere is sometimes Henley on Thames, England or San Diego; Madison Square Garden, New York; and Fenway Park, Boston. In fact, you could include Montreal in the summer of '76 when three Northeastern alumni (more than any other New England College) were members of the United States Olympic team, with one alumnus winning a silver medal.

All students are urged to participate in the University's athletic program, which includes all major collegiate sports. The University maintains varsity teams in baseball, crew, swimming, cross-country, track, football, hockey, skiing, basketball, and golf. These teams are among the finest in the East and have represented the University in both national and international competition. Students may also participate in such sports as sailing, water polo, volleyball, lacrosse, soccer, gymnastics, softball and handball.

Facilities include the spacious Cabot Physical Education Center and Edward S. Parsons Field. The gymnasium contains four basketball courts and one gymnastics court and a cage that provides facilities for indoor track as well as baseball and football drills. Parsons Field is the location of the Huskies' football stadium with its new artificial turf and the Northeastern baseball diamond. It also accommodates training areas for the outdoor track team. The Northeastern crew enjoys a spacious white boat house on the Charles River and also works out in the Cabot complex, where rowing tanks are located. The hockey team makes its home in the historic Boston Arena, located only yards away from the campus.

Northeastern annually fields one of the toughest football teams in New England. In their forty years of football history, the Huskies have enjoyed three undefeated seasons, and in 1963 went on to play in the Eastern Bowl. Northeastern always plays a commanding schedule including, in recent years, such opponents as Harvard, Holy Cross, Colgate, UMass., Bucknell, New Hampshire, and Rhode Island.

The University's hockey team is traditionally one of the most powerful in the East. It is annually ranked in the top ten in the East and has competed in several Eastern College Athletic Conference Championships. The Husky icemen have

also won the E.C.A.C. Holiday Hockey Tournament in New York's Madison Square Garden, the R.P.I. Invitational, and the Yale Holiday Festival. Each year they play in the popular Beanpot Tournament before standing-room-only crowds at the Boston Garden.

The basketball team wages its war in the tough Division I League of the N.C.A.A. It plays local powers such as Harvard, Boston College, UMass., and Holy Cross and is constantly flying out to challenge some of the country's best in Penn., American Univ., and Syracuse. Even against the best in the East, they have had only two losing seasons in the last ten years.

To talk about track and cross-country in New England is to talk about Northeastern track. The Huskies have dominated the New England track scene for the past ten years. In fact, Northeastern has won the last five New England Indoor titles and the last two outdoor championships. The Huskies can boast of numbers of individual New England, I.C.A.A., and N.C.A.A. champions and last year had two runners on the United States Touring Track Team.

Northeastern also fields strong teams in golf and skiing, and competes in all the major eastern championships. In skiing, Northeastern won the CAN-AM Championship in 1978 and again in 1979.

The most amazing Husky sport story is that of the Northeastern crew. In 1965, their first season, they won four out of five regattas, the small-college rowing championships, and became the first N.U. team to participate in international competition when they rowed in the Henley Royal Regatta. The next year, the Huskies moved into the major college rowing league. They culminated their swift rise by winning the Eastern Sprints in 1972 and 1973, and rowed in the finals of the Grand Challenge Cup of the Henley Royal Regatta. In 1973, they were considered the finest eight in the nation. In 1978, the freshman crew was invited to row the Thames Challenge Cup race at Henley.



Women's Athletics

From a very small program with very few resources, the Northeastern University Women's Intercollegiate Athletic program has grown rapidly in the past several years, reflecting the tremendous growth in women's athletics at all levels. The program now encompasses eight activities: basketball, crew, field hockey, gymnastics, lacrosse, swimming and diving, tennis, and volleyball.

The field hockey and lacrosse teams, using both our Warren Center facility in Ashland and the astroturf surface at Edward S. Parsons Field in Brookline, have long been regarded as among the strongest in New England. Our basketball and volleyball programs, working out of Dockser Hall on the Boston campus, have appeared regularly in state and regional championships. The tennis team, with recent steady improvement, has completed its finest year with a 9-2 record. Our gymnastics team has improved steadily and participated in the 1978 Regional Championship.

Our two newest programs, crew and swimming and diving, are in their initial year. The swimmers, working in beautiful Barletta Natatorium, are lowering their times with every meet. The women's crew, demonstrating their rapid progress, took first place in the Foot of the Charles Regatta in fall, 1978 and are eagerly looking forward to their first spring season as a varsity team.

As charter members of the Association for Intercollegiate Athletics for Women, Northeastern University subscribes to all policies and regulations of the Association. Athletic scholarships are available to women student athletes in all programs.

Northeastern's goal is to provide an excellent program of intercollegiate athletics for all women students who qualify. Our programs are in the mainstream of the exciting growth in women's athletics throughout the country.

International Student Information

The University welcomes qualified students from foreign lands who are adequately prepared to benefit from the educational, cultural, and social opportunities it has to offer. Eighty countries are currently represented within our student body.

Northeastern University is authorized under federal law to enroll nonimmigrant aliens as full-time students in degree-granting programs of its basic undergraduate colleges and graduate schools. Part-time and special students are not included in this authorization.

Because of problems of adjustment experienced by many students from foreign countries, the University makes a special effort to evaluate carefully the educational and financial qualifications of prospective students. The University has an International Student Adviser and staff to administer the special needs of these students.

University admissions policies for foreign students are outlined in "A Guide for Students from Other Countries," available from the Department of Admissions or the office of the International Student Adviser.

The University does not award financial aid to international students.

This school is authorized under federal law to enroll nonimmigrant alien students.

The English Language Center offers beginning, intermediate, and advanced levels of intensive, noncredit courses in English as a Second Language.

International students who need to have their English skills evaluated, and those who wish to improve their English for specific purposes, may obtain special assistance through this office. There are also English language courses for foreign students offered for credit at the freshman level.

Students at each level of the Intensive English Program participate in 15 hours of classroom instruction a week, with emphasis on grammar, listening, speaking, reading, writing, and study skills. Practice in a monitored language laboratory is conducted each day. Students also participate in twice-a-week individual or small-group tutorials. Classes are kept small to allow maximum student participation and socializing.

Freshman Orientation Programs

Except for the visits which we hope students will make to the Admissions Office, the first opportunity to learn about Northeastern and to meet classmates, deans, and advisers will come during the freshman orientation period.

The program for orientation is planned and supervised by the Director of Orientation who will see to it that students are introduced to the customs and people that make up Northeastern. At that time, registration, class schedules, and other procedures and details necessary for enrollment will be completed.

During the orientation period, in accordance with a long-standing tradition, students will be welcomed by the President at a special convocation. Also they will be able to meet with deans and others who will have important roles in their college careers.

Upperclass students generously volunteer their time to assist in setting up and running programs, primarily evening events, which provide opportunities for relaxation, recreation, and cultural enrichment. The Office of the Dean of Students is available during the orientation period and throughout the year to answer questions and provide assistance. The Freshman Affairs unit of that office has special responsibility for monitoring the academic progress of all freshmen and for assisting them in a variety of ways to attain sophomore status.

Part Four

General Information



General Information

History

Founded in 1898, Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. By special enactment, the State Legislature has given the University general degree-granting powers. The University is governed by a Board of Trustees who are elected by and from the Northeastern University Corporation, which is composed of 174 distinguished business and professional men and women.

From its beginning, Northeastern University's dominant purpose has been the discovery of community educational needs and distinctive and serviceable ways of meeting them. The University has not duplicated the programs of other institutions, but has sought to pioneer new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, initiated by the College of Engineering in 1909 and subsequently adopted by the Colleges of Business Administration (1922), Arts and Sciences (1935), Education (1953), Pharmacy (1962), Nursing (1964), Boston-Bouvé College (1964), the College of Criminal Justice (1967), and by Lincoln College's daytime Bachelor of Engineering Technology Program (1971). This educational method enables students to gain valuable practical experience as an integral part of their college programs and also provides the means by which they may contribute substantially to the financing of their education. The Plan has been extended to the graduate level in engineering, actuarial science, rehabilitation administration, professional accounting, business administration, and law.

In the field of adult education, the University offers graduate and undergraduate degree programs and non-credit programs which are specifically designed to meet the needs and interests of adults who wish to further their education on a part-time basis.

All formal courses of study leading to degrees in the Graduate Division, Lincoln College, and University College are approved by the undergraduate faculties concerned, and are governed by the same qualitative and quantitative standards as the regular day curricula. Courses are scheduled in the day and evening at the Boston Campus, Suburban Campus in Burlington, and at other off-campus locations near Boston.

Policy on Changes of Program

The University reserves the right to withdraw, modify, augment or change the order or content of courses in any curriculum.

It further reserves the right to change the requirements for graduation, tuition, and fees charged, and other regulations. However, no change in tuition and fees at any time shall become effective until the school year following that in which it is announced.

Any changes which may be made from time to time pursuant to the above policy shall be applicable to all students in the school, college, or department concerned, including former students who may re-enroll.

Textbooks and Supplies

The Northeastern University Bookstore, located on the ground floor of the Ell Student Center, is a department of the University and is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the University may be purchased at the Bookstore.



The Academic Year

Northeastern University operates on a quarter system calendar.

Quarter Hour Credits

All courses are evaluated in terms of quarter-hour credit. A quarter-hour credit is equal to three-fourths of a semester-hour credit.

Grades and Examinations

Examinations covering the work of the quarter are usually held at the close of each quarter. Exceptions may be made in certain courses where, in the opinion of the instructor, and with the approval of the Dean of the College concerned, final examinations are not necessary.

Pass-Fail System

Students may register for a limited number of courses on a pass-fail basis. Each college has its own rules governing this system. Common to all colleges, however, is the grading system. Pass-fail grades are not included in the calculation of the quality point average. Only pass grades earn credits toward degree requirements.

Grades

A student's grade is officially recorded by letter. Beginning September 1980, the following grades, listed below with their numerical equivalents, will be used.

A	4.0
A—	3.667
B+	3.333
B	3.0
B—	2.667
C+	2.333
C	2.0
C—	1.667
D+	1.333
D	1.0
D—	.667
F	0

A general average of D is not acceptable and will not allow a student to continue at Northeastern University.

Freshman students who are taking a full academic program and who have a weighted average for the year below 1.4 will not be permitted to register for advanced work. Upper-class students should consult the Student Handbook to ascertain the level of continuing achievement required of them by the faculty of their college.

An I, or X (Incomplete), grade is used to show that the student has not completed the course requirements.

An official University grade report is mailed to each student at the end of each quarter.

Transcripts

Applications for transcripts of record are made at the Registrar's Office (120 HA). A charge of \$1.00 is made for each transcript request.

Dean's List

An Honors or Dean's List is issued at the end of each quarter and award recipients are notified by mail. The list contains the names of students who have a 3.0 weighted average or higher, with no I grade or grade below C. A student who is on any form of probation, enrolled in a course on a Pass-Fail basis (except where there is no alternative or where required by the program), or who is not carrying a full load as determined by their Basic College will not be eligible.

Dean's List	3.0 -3.49
Dean's List with High Honor	3.50-3.74
Dean's List with Highest Honor	3.75-4.0

Reports on Scholastic Standing

Reports for all students are issued at the end of each grading period. Questions about grades are to be discussed with the student's faculty adviser.

At the end of the academic year, juniors will receive, in addition to their term report, a complete cumulative copy of their permanent record. This is so that juniors may be aware of any discrepancies in their record, and if so, may contact the dean of their college.

Students are constantly encouraged to maintain an acceptable quality of college work. Parents and students are always welcomed by the college officers and faculty advisers for conference upon such matters.

Family Educational Rights and Privacy Act

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records wherever appropriate and to challenge specific parts of them when they feel it necessary to do so. Specific details of the law as it applies to Northeastern are printed in the *Student Handbook* and are distributed annually at registrations of University College and the graduate schools.

It is the policy of Northeastern University to deal with the student in all academic and administrative matters. If parents require any information regarding the progress of their son or daughter, they may contact the Dean of Students Office or the Office of Parents' Services.

General Conduct

It is assumed that students come to the University for a serious purpose and that they will conform to such regulations as may from time to time be made. The University community expects each student to respect the rights and privileges of others and to adhere to acceptable standards of personal conduct. Students should exercise their freedom with maturity and responsibility. They are expected to obey University regulations and follow the instructions of and pay due respect to University officials. Conduct inconsistent with the general order of the University may result in disciplinary action. Damage to any building or to any of the furniture, apparatus, or other property of the University will be charged to the student or students known to be immediately involved.

The University seeks to administer discipline with a high standard of integrity and a scrupulous regard for truth. The attempt of any student to present any work which is not his or her own, or to pass any examination by improper means, is regarded as a most serious offense and renders the offender liable to disciplinary action. The aiding and abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Attendance

Students are expected to attend all meetings of their classes. Absence from regularly scheduled classes may seriously affect the standing of the student and result in dropping the subject or subjects from his or her schedule. Laboratory work can be made up only during hours of regularly scheduled instruction.

Emergency Closing of the University

Students, faculty, and staff are notified by radio when it becomes necessary to cancel classes because of extremely inclement weather. Radio stations WBZ, WEEI, WHDH, WJDA, WCOP, WRKO, WLYN, WKOX, WHAV, and WLLH-AM, and WVBF and WBCN-FM, will announce the University's decision to close.

In addition, the University maintains an emergency snow phone with a taped message which will indicate the status of classes.

ROTC

Military Officers Education Program

Army

John W. Peters, LTC, U.S.A.; M.S., *Professor and Chairman*

General Objectives

The Department of Military Science administers Northeastern's ROTC Program. Regarded by the University as an integral part of its education program, ROTC is available on a voluntary basis to all full-time students. The program's mission is to develop officers—leaders. It offers courses of instruction designed to lead to a commission as an Army second lieutenant.

The ROTC staff consists of active Army officers and NCO's, assigned by the Department of the Army.

Courses of Study

The program consists of the Basic Course (freshman and sophomore years) and the Advanced Course (middler, junior, and senior years); and it complements the Co-op Program by tailoring the courses to the student's schedule.

Enrollment in the Basic Course is voluntary and is open to all students of the Basic Colleges who qualify. Students do not incur a military obligation if they withdraw from the *Basic Course*.

The Advanced Course is open to all qualified students who meet these prerequisites: (1) Completed Basic Course or approved equivalent, or prior honorable service; (2) Physical requirements; (3) Age requirements; and (4) Complete application. Students accepted for the Advanced Course execute a written contract which obligates the newly-commissioned second lieutenant to a period of military service. Advanced Course students receive a \$100/month stipend (\$2000 total) as well as special pay for attending summer camp.

ROTC Scholarships

The Army ROTC scholarship provides full tuition, fees, textbooks, and \$100 per month to the recipient. Scholarships are available in varying lengths and cover the cadet's remaining academic years. *Non-cadets* may apply for scholarships during their freshman or sophomore years. These awards are not related to financial need, and a student's earnings during cooperative work periods do not reduce scholarship payments.

Veterans and Transfer Students

Honorably discharged veterans (enlisted) are a vital part of our cadet corps and will receive special consideration for ROTC entry.

Transfer students, whether or not previously enrolled in ROTC, are also welcome to join our program. They should contact the Department of Military Science concerning their options for program entry.

Uniforms and Equipment

Uniforms are issued without cost to ROTC cadets. A \$25 deposit is required to insure turn-in of the loaned property, in good condition. Loss or damage to Army equipment, exceeding the deposit, will be charged to the student.

Academic Credits

Regulations of the individual Basic Colleges prevail for ROTC graduation credit. Students, however, may individually petition their academic department for acceptance of certain courses for graduation credit.

Air Force

William R. Trott, Ph.D., Colonel, USAF

Director of the Office of Aerospace Studies, MIT

General Objectives

Air Force ROTC is available to Northeastern students through the Office of Aerospace Studies at the Massachusetts Institute of Technology. Students will attend Aerospace Studies classes on the MIT campus, but are not required to enroll at MIT. The program is similar in mission, scope, and benefits offered to Northeastern's on-campus Army program, except that students are prepared for an Air Force commission. Eligibility requirements, in addition to being a U.S. citizen, include passing an Air Force physical and being enrolled as a full-time Northeastern student.

Application Procedures

When arriving on campus, eligible freshmen may sign up for the program by selecting Air Force subjects (91.201 and 91.202). Interested students should contact the Air Force ROTC Office when notified of admission to the University; or they can make application by a personal visit to the Office of Aerospace Studies, Building 20, Wing E, Room 111, Cambridge, MA, or by calling (617) 253-4472.

Division of Cooperative Education

Roy L. Wooldridge, Ed.M., *Vice President for Cooperative Education*

Sidney F. Austin, M.Ed., *Associate Dean*

Thomas E. McMahon, M.Ed., *Executive Officer and Associate Dean*



Cooperative Education is a dynamic system of education based on the principle that students develop most effectively through an educational program that provides for periodic exposure to the world that exists beyond the campus. Through controlled and structured experiences, students bring an enrichment to the classroom that enhances their total development. The essential factors are that satisfactory participation in cooperative education is considered a degree requirement, and that the educational institution assumes the responsibility for integrating these experiences into the education process. It is called "cooperative education" because it is dependent upon the cooperation of outside agencies, educators, and students to produce an integrated program.

Studies have shown that the reinforcement of classroom learning by job responsibilities increases a student's motivation and self-confidence. Greater interest in academic work develops when the student sees the relationship between job responsibilities and principles studied on campus. These experiences can also help to instill a sense of identity and worth as the student functions as an adult in an adult world.

Northeastern's commitment to cooperative education is illustrated by the diverse but related activities of the five departments within the Division of Cooperative Education. Each department makes a unique contribution to the development of cooperative education and the enhancement of its effect on Northeastern's students.

The Department of Cooperative Education

Paul M. Pratt, M.Ed., *Dean*

Richard E. Sprague, M.B.A., M.Ed., C.A.G.S., *Assistant Dean*

Jane S. Schachter, M.Ed., *Director, Life/Career Planning Program*

Karen E. McGuire, M.Ed., *Instructional Designer*

Professors

Nancy J. Caruso, M.Ed.

Charles F. Field, M.Ed.

George K. Howe, M.Ed.

Robert W. Miller, M.Ed.

Associate Professors

Ernest V. Barrasso, M.Ed.

Boreslaw P. Berestecky, M.Ed.

Betsey W. Blackmer, M.Ed.

Richard L. Canale, M.Ed., C.A.G.S.

Elizabeth A. Chilvers, M.Ed.

Mark I. Conley, Jr., M.S., C.A.G.S.

Robert D. Deforge, M.Ed.

Rosemarie DiMarco, M.S.

Philip W. Dunphy, M.Ed.

Mary R. Flynn, M.Ed.

John D. Hammond, M.P.A.

Kenneth R. Hancock, Jr., B.S.

Stephen M. Kane, M.Ed., M.S.,
C.A.G.S.

Gerard J. Lavoie, M.P.A.

Homer C. Littlefield, B.S.

Anthony R. Rotondi, M.Ed.

Willie Smith, Jr., M.Ed.

Roderic W. Sommers, M.Ed.

Hugh J. Talbot, M.P.A.

Robert E. Vozzella, M.A.

Assistant Professors

Donald L. Eastridge, M.Div.

Judith A. Moll, M.S.

William A. Sloane, M.B.A.

Robert T. Tillman, B.S.

Instructors

Michael A. Ablove, M.Ed.

Rochelle Abrams, M.S.

Robert S. Brown, M.B.A.

Kathleen L. Finn, B.S.

John C. Mulhall, M.S.

Patrick F. Todd, B.S.

This is the largest of the five departments and is responsible for the administration of the cooperative education program for undergraduate and graduate students at Northeastern. Details on the specifics of operation are explained on page 30 of this catalog and in a booklet entitled "Co-opportunities" which is available from the Department of Admissions on request.

The Center for Cooperative Education

Paul E. Dubé, M.A., M.Ed., *Director*

Educational institutions and other organizations exploring, developing, expanding, or improving programs in cooperative education contact the Center for a variety of services. All facets of the establishment, operation, and expansion of programs may be explored with professional consultants familiar with all aspects of cooperative education.

Intensive, short-term training workshops for both new and experienced coordinators of cooperative programs and the four-week Summer Institute in Cooperative Education offering eight quarter-hours of graduate credit are among the services offered by the Center.

Through the Center, Northeastern University carries its unique program in cooperative education to the international scene by offering undergraduate and graduate students the opportunity to be placed abroad for their cooperative work. The University maintains an active foreign placement program in Germany, France, Britain, and Colombia for students whose linguistic, academic, and professional experience makes them competent candidates for positions abroad.

The Center for Secondary School Work Experience Education

Ellen N. Winer, Ed.D., *Director*

A full complement of consulting, training, and research services is available to schools and other educational facilities, community groups, and employers interested in implementing or expanding work experience programs at the secondary school level. These services are designed to assist school faculty who have primary responsibility for initiating and conducting work experience programs to plan, implement, and evaluate their efforts.

The Cooperative Education Research Center

James W. Wilson, Ph.D., *Asa Smallidge Knowles Professor
of Cooperative Education and Director*

Various aspects of the effectiveness of cooperative education are continuously investigated by the staff of the Research Center and the results are published and disseminated among the cooperative education community. The purpose of these studies is to aid practitioners in the field so that they can be of greater service to students enrolled in cooperative education programs. As a part of its research activity, the Research Center has established an Information Clearinghouse to store information about cooperative education and make it available to interested people throughout the country. A library of cooperative education and related material is maintained for research and consulting purposes.

Department of Career Development and Placement

Sidney F. Austin, M.Ed., *Director*

The Department of Career Development and Placement offers a wide range of counseling and placement assistance to all seniors and alumni of Northeastern University and to undergraduates seeking admission to medical, law, and other professional schools.

Through this department, representatives of hundreds of employers are scheduled to visit the campus each year to interview seniors and graduate students for full-time employment after graduation. A job bank of currently available positions is maintained for alumni who are seeking new opportunities for which they may be qualified. Credential service is provided for students and alumni seeking positions in the field of education. Regularly scheduled seminars are conducted for seniors and alumni on career development, job-finding techniques, resume preparation, and effective interviewing.

University Libraries

Roland H. Moody, A.B., B.L.S., *Director*



"All that mankind has done, thought, gained, or been: it is lying as in magic preservation in the pages of books."—Thomas Carlyle

The University Libraries endeavor to provide the informational and bibliographic services required by students and scholars working in subject fields covered by University programs of instruction and research. In all, the collections include more than 430,000 cataloged volumes. In addition, the Library holds in excess of 427,000 titles on microform including the comprehensive *Libraries of American Civilization and English Literature*.

The microform collection includes microprint, microfilm, and microfiche with appropriate equipment for reading.

Periodicals (approximately 3,775 titles received currently), government documents relevant to the University, technical reports, pamphlets, and recordings (more than 5,000) enhance the collections. There are duplicating facilities available in all libraries.

Libraries

The Dodge Library houses the main collections, the main bibliographic resources for the library system, the central processing units, and library administration. Its seven air-conditioned reading rooms, many recently renovated, include the Richardson Room; the Reference Room, with a collection in excess of 20,000 volumes including almanacs, atlases, bibliographies, biographical dictionaries, business services, dictionaries, directories, encyclopedias, gazetteers, handbooks and manuals, indexes and abstracts, and technical reports;

the Periodical Room; the Documents Room; the Microform Room; and the Reserve Book Room with a 20,000-volume collection, and the Fine Arts Room.

Additional libraries include the divisional libraries of Physics/Electrical Engineering, Mathematics/Psychology, and the Hurtig Hall Library (Chemistry, Biology, and Pharmacy)—all graduate-level collections; the Boston-Bouvé College Library; and the School of Law Library. The Suburban Campus at Burlington has its own library, and there are also collections at the Marine Science Institute in Nahant, and the Center for Management Development in Andover.

Services and Hours

A handbook, A-V aids, bibliographic guides, and lectures introduce students to methods of utilizing the resources of the collections, and a dedicated staff is prepared to help users of the various libraries. All members of the University, and others at the discretion of the Librarian, have the use of reference books, government documents, card catalogs, and service. During term time, most libraries are open 7:45 a.m. to 10:00 p.m., Monday through Thursday; 7:45 a.m. to 7:30 p.m. on Friday; 1:00 p.m. to 5:00 p.m., Saturday and Sunday with certain areas in the Dodge Library open later hours in the evening.

New England Library Information Network

The Northeastern Libraries have computerized many operations internally and, in addition, hold membership in the New England Library Information Network. NELINET has been established for the purpose of developing and operating major library support services. It is a network of libraries devoted to sharing financial, human, and material resources to reduce cost and redundancy, and to expand the timeliness and variety of services available.

Office of Learning Resources

Mina B. Ghattas, Ph.D., *Director*

The Office of Learning Resources (OLR) provides faculty, students and staff with a variety of instructional services, equipment, and learning facilities.

The Learning Resources Center furnishes students with individualized study and language lab facilities for remedial, supplementary, or enrichment purposes in many subject areas in many formats—programmed texts, audiotapes, videotapes, and sound filmstrips, among others. A listening lounge, equipped with a stereophonic sound system, supplies a large selection of classical and popular prerecorded music. Students may use all LRC facilities independently or to complete class assignments at no cost during day, evening, and weekend hours.

The Media Production and Training Laboratory provides facilities for both students and faculty for producing original materials, such as overhead transparencies, audiotapes, illustrations, slides, posters, and charts. Training is given in the use of all equipment, including that used for television production in a mini-studio. Training workshops may be arranged for organized groups.

Campus Media Services makes available all types of audiovisual and video equipment and instructional materials for the support of classroom instruction on a prescheduled basis. Items include film, filmstrip, slide, opaque and



overhead projectors, audio and videotape recorders, TV cameras and monitors, portable public address systems, telelecture equipment, record players, and projection screens. This section also distributes instructional materials from the NU-owned collection, such as 16-mm films, videotapes, filmstrips, film loops, slides, and audio cassettes. Certain equipment is reserved for student use, and students may also borrow instructional materials with faculty approval. A catalog of all instructional materials is available at no charge.

The Instructional Materials Center, which acquires and maintains the collection of NU-owned instructional materials, also provides a rental service for 16-mm films and videotapes obtained from outside sources. Faculty who would like to evaluate instructional materials before purchase make use of its preview service. Preview facilities are available for small-group viewing of all types of materials by members of the University community. An up-to-date collection of research reports, periodicals, instructional materials, catalogs, and other reference volumes on all aspects of instructional media and technology is similarly accessible.

The Instructional Development Center assists individual faculty with specifying instructional goals, reviewing related literature and materials, examining alternative teaching strategies, producing learning materials, and evaluating course effectiveness. Its training in presentation and teaching techniques is complementary to its basic function of developing instructional units and courses.

University Health Services

Lane Health Center

Job E. Fuchs, M.D., *Director*

A comprehensive program of medical care is provided to all full-time registered students in the Basic Colleges, both graduate and undergraduate. The University maintains a Health Services Clinic in the Forsyth Building, Room 135, which is open for emergencies at all times, and is equipped to deal promptly with any medical condition that may arise. All entering students must file a record of physical examination with Health Services. Failure to fulfill this requirement can delay registration and result in a penalty fee and an additional fee for a physical examination. Regular clinic hours for the student body are held by staff physicians from 9:00 a.m. to 4:30 p.m., Monday through Friday. Health Services can be reached at all times by telephoning 437-2772.

Specialty clinics in surgery, orthopedic surgery, gynecology, and fertility control and planning are scheduled at specified hours. Please check times with the Health Services office. Pregnancy testing and venereal disease diagnosis and treatment services are always available during clinic hours. Allergy testing and treatment on students with allergic problems is done at the Lane Health Center at no cost except for a nominal fee for the cost of the extracts. Allergic desensitization injections using extract provided by the students own physician will be given at no cost provided the extract is received in good condition, properly labeled, and with a dosage schedule. Consultation with the various

medical and surgical specialists who are not physically present in the Clinic will be arranged when deemed necessary by a Health Service physician. The cost of the first visit will be borne by the Health Services.

Special X-ray and laboratory procedures that are unavailable in the Health Services, but are deemed necessary by a staff physician, will be provided. A full spectrum of mental health services is available. A mental health specialist is present daily, and students are urged to use this service even for minor emotional upsets.

All full-time graduate and undergraduate students are covered by a special Blue Cross and Blue Shield policy which remains in effect continuously from the day of initial registration until the first of the month following withdrawal, dismissal, or graduation. Married students should see the Bursar about purchasing supplementary coverage for dependents.

An infirmary is also maintained in the Forsyth Building for the care of students living in University dormitories and apartment houses. The required infirmary fee entitles students to twenty days care in the infirmary at no additional charge.

The Reading Clinic

Melvin Howards, Ph.D., *Director*

The Northeastern University Reading Clinic has been in full operation since the spring, 1970, serving approximately 400 persons each year, making it one of the largest reading clinics in the country. We offer a wide range of diagnostic and corrective services for persons of all ages experiencing all types of reading and language problems. We also serve Northeastern University students with reading and language problems.

Space The clinic occupies a suite of 12 private rooms at 100 Cahners Hall, Boston. As the need arises, other instructional spaces are made available. Videotape recording space for taping and viewing exists. Audiotape recorders and various other media equipment are available at the University Audiovisual Services. All these resources assist us in improving the quality of instruction.

Resources The Northeastern University faculty have skills needed for a wide range of testing: WAIS, WISC, Binet, ITPA, Bender, all standardized tests, among others.

Procedure 1. If you need or want help in learning how to read or write, no matter what your age or educational experience, call the clinic at 617-437-3305 or -3306.

2. Make an appointment for initial testing.

3. After the test, you may be assigned to a place in the clinic when there are openings.

Speed Reading The Reading Clinic offers a special noncredit course in Speed Reading designed to improve skills in rapid, study, critical, and pleasure reading. Whether the desire is to increase speed or improve understanding or both, students have the opportunity to learn to apply tested reading and study techniques that strengthen accuracy and recall in all normal reading assignments.

The course is offered during the Fall, Winter, Spring and Summer Quarters. Students may register during the first week of each quarter. Classes meet one evening a week from 4:00–6:30 or 7:00–9:30, and are held in 304 Dodge.

A discount tuition rate is available for Northeastern University staff, students, and alumni, and all materials are usually supplied at no expense.

The Counseling and Testing Center

Philip W. Pendleton, Ph.D., *Director*

The purpose of the Counseling and Testing Center is to offer assistance to students in a wide variety of areas such as career planning, personal and life adjustment problems, study skills, anxiety, choice of major, and interpersonal relationships. At the Center, students are encouraged to discuss their concerns with a counselor, following which they may decide to continue individual counseling; take psychological tests to increase their knowledge of themselves; join a group of students with whom they can share concerns; and make use of the Center's extensive file of information about careers and services.

The Center's services are available, without charge, to all students in the Basic Colleges. Students can arrange an appointment by telephoning 617-437-2142 or by visiting the Center in Room 302 Ell. Vocational counseling services are also available on a fee basis to high school students and adults.

The counseling services of the Counseling and Testing Center are approved by the International Association of Counseling Services.

The Computation Center

Richard I. Carter, M.S., *Director*

The importance of the computer as a support system to human activity and an aid in solving problems is obvious. At Northeastern, the computer facilities reflect the University's recognition of the essential role played by this technology. Its two computer groups, the Computation Center and Administrative Computer Services, serve faculty, students, and administration in many ways.

The Computation Center, the University's academic computing facility, supports the research, teaching, and learning activities of faculty, research personnel, and graduate and undergraduate students.

The Computation Center is located in the basement of Richards Hall, 617-437-2335. The director and staff welcome you to our user community and look forward to serving your computing needs.

Services for the Handicapped

Ruth K. Bork, M.Ed., *Director*

The Northeastern University Office of Services for the Handicapped (OSH) was established to meet the needs of any disabled member of the University community. The office, in Room 5 Ell, is centrally located directly across the hall from the Bookstore and is staffed daily from 8:30 a.m. to 4:30 p.m., with variable evening hours as necessary. Prospective students can arrange an appointment to visit OSH by calling (617) 437-2675. The Director is Ms. Ruth K. Bork.

Special services available for disabled students through the OSH include: tactile maps, accessible travel routes, guided explanatory tours, registration and preregistration counseling; textbooks, referral, auxiliary aids and equipment, readers, scribes, volunteer assistance, physical therapy and speech therapy referral, an information clearinghouse, parking for the handicapped, and general assistance and information.

OSH is also the gathering place for the Disabled Students' Organization of Northeastern University which works cooperatively with OSH to plan programs and improve accessibility and services.

Students with special needs are encouraged to contact the OSH at least two months prior to arrival on campus. This will ensure that necessary preparations are made to provide for special housing and academic needs as well as to avoid unnecessary delays and confusion which will arise with last minute adjustments.

Office of Community Development

Gregory T. Ricks, M.C.P., *Director*

The Office of Community Development has been empowered to establish a good neighbor policy. We help the community to help themselves by offering use of physical facilities such as meeting rooms and recreational facilities; technical assistance in preparing planning reports and grant proposals; but most importantly access to students, staff, and faculty. Examples of projects include placing Graduate School of Business Administration interns at the Elma Lewis School of Fine Arts, a two-week summer camp for inner city youth at the Warren Center, and a H.E.A.L.T.H.Y. program at the Morville House for the elderly in the Fenway area of Boston.

Office of Creative Arts and Artist-In-Residence Programs

Mort S. Kaplan, M.A., *Director*

This office serves as the central office for the arts at Northeastern, administering two distinct programs which affect the cultural life of the university in significant ways.

The **Creative Arts Program** coordinates and provides support services to campus arts and performance organizations; publishes *Artscene*, a periodical newspaper reviewing the arts at Northeastern and nearby; and administers the

University's Central Box Office (located in the lobby of the Eli Building). A full-service cultural resource to the Northeastern community, the Box Office handles ticket sales for on-campus arts events; serves as a one-stop outlet for tickets and passes to Boston's major arts organizations (including the Boston Symphony Orchestra, Boston Ballet Company, Opera Company of Boston, Museum of Fine Arts, and numerous theatres); functions as a central information source on arts events at NU and throughout the city; and maintains an ushering list, enabling Northeastern students to serve as ushers at a number of on- and off-campus arts events, receiving free admission for their services.

The **Artist-In-Residence Program** develops and administers residencies which bring visiting artists to campus, emphasizing the artist as teacher/performer. Program personnel work closely with academic departments and Northeastern's performance organizations to create residencies which encourage and affect curriculum development and interdisciplinary programming. This program—unusual in American higher education—has brought to campus a series of remarkable artist/teachers who have become involved in Northeastern's academic and artistic life on a number of levels, teaching innovative courses, performing and interacting with students and faculty formally and informally.

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This newly established office is operated by the Director of Parents' Services and Assistant Dean of Administration. The Director is the University's ombudsman for the parents of undergraduate and graduate students, facilitating the resolution of problems and exchange of information.

The Office provides a central counseling and resources operation to better relationships between Northeastern and the parents of its student body. Social and cultural programs to promote a better understanding of Northeastern's diversified academic and administrative departments are also available.

This Office is in constant contact with the various academic deans' offices, Cooperative Education, Dean of Students, Financial Aid, Housing, Registrar's Office, Bursar and other administrative departments that may relate to parents' concerns.

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Academic Calendar 1979-1980

September 1979

3	Monday	LABOR DAY. University closed.
4-7	Tuesday-Friday	Final Examinations for Basic Colleges.
10-22	Monday-Saturday	Division A vacation.
13	Thursday	FALL COMMENCEMENT.
17	Monday	Freshman Orientation Boston Class 1984 Transfer Orientation
19	Wednesday	Burlington Orientation
21	Friday	Beginning of 1979-1980 academic year. Upper-class registration for Divisions A and C.
24	Monday	No Basic Colleges classes today.

October 1979

8	Monday	COLUMBUS DAY. University closed.
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November 1979

12	Monday	VETERANS' DAY observed. University closed.
22-24	Thursday-Saturday	THANKSGIVING DAY recess.

December 1979

10-14	Monday-Friday	Final Examinations for Basic Colleges.
17-Jan. 1	Monday-Tuesday	CHRISTMAS vacation.

January 1980

1	Tuesday	NEW YEAR'S DAY. University closed.
2	Wednesday	Evening classes begin in graduate schools, University and Lincoln Colleges both day and evening, and in part-time Engineering on regular schedule. BASIC COLLEGES ONLY. Orientation of all newly admitted students in Basic Colleges. Start of UC, LC, Graduate Winter Quarter.
4	Friday	9 a.m.: registration for Quarter 2, Class 1984. 11 a.m.: new student registration completed for those admitted in January 1980.
7	Monday	9 a.m.: upperclass registration Divisions B and C. SPECIAL SCHEDULE ALL STUDENTS: Beginning 11 a.m., Friday classes meet as follows: 11 a.m., Seq. 7 courses; 12:15 p.m., Seq. 8 courses; 2 p.m., Seq. 9 courses; 3:15 p.m., Seq. 10 courses.
15	Tuesday	MARTIN LUTHER KING, JR'S. BIRTHDAY. University closed.

February 1980

18	Monday	WASHINGTON'S BIRTHDAY. University closed.
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March 1980

17-21	Monday-Friday	Final Examinations for Basic Colleges.
24-29	Monday-Saturday	Vacation period for all students in all colleges and schools (Division B vacation).
31	Monday	Registration for Divisions A and C students and Division B seniors. Registration for freshmen (Quarter Three) at Boston Campus, Burlington Campus, and January freshmen (Quarter Two). Beginning of Spring Quarter. Beginning of Division B work period. No Basic Colleges classes today.

April 1980

21	Monday	PATRIOTS' DAY. University closed.
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May 1980

26	Monday	MEMORIAL DAY. University closed.
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June 1980

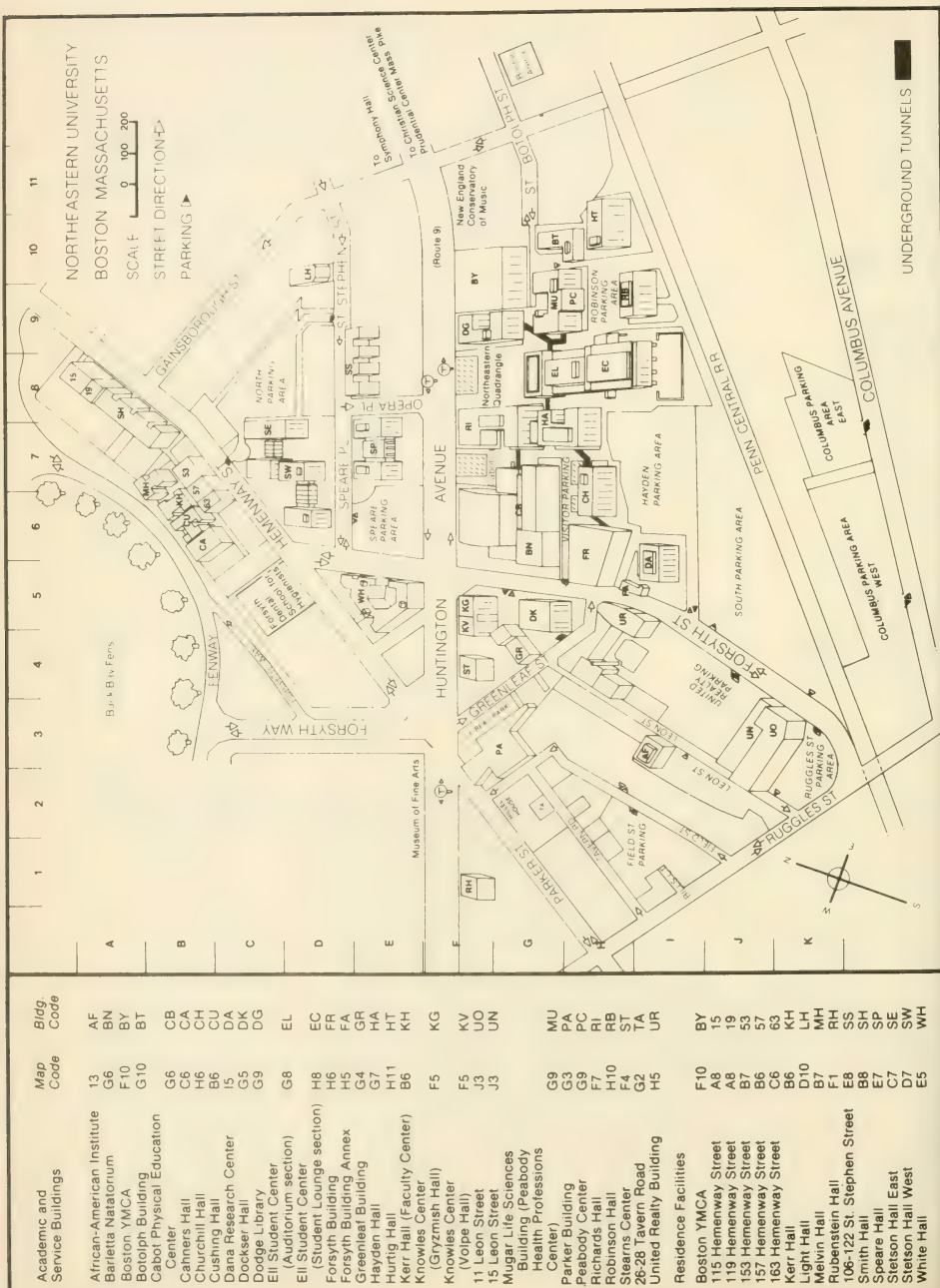
9-13	Monday-Friday	Final Examinations for Basic Colleges.
15	Sunday	COMMENCEMENT.
16-21	Monday-Saturday	Division A vacation.
23	Monday	Registration for Divisions B and D and January freshmen (Quarter Three). Beginning of Summer Quarter. Beginning of Division A work quarter. No Basic Colleges classes today.

July 1980

4	Friday	INDEPENDENCE DAY. University closed.
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September 1980

1	Monday	LABOR DAY. University closed.
2-5	Tuesday-Friday	Final Examinations for Basic Colleges.
8-27	Monday-Saturday	Division B vacation.
11	Thursday	FALL COMMENCEMENT.
29	Monday	Beginning of 1980-1981 academic year. Upper-class registration for Divisions B and C. Boston and Burlington freshmen complete their registration. No Basic Colleges classes today.



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Gifts and Bequests to Northeastern University

Northeastern University welcomes gifts and bequests to further its educational purposes. It is recommended that those contemplating gifts or bequests confer with the President of the University regarding the needs of the University.

A member of Northeastern University's staff will be happy to consult with those considering a gift or bequest. Planned gifts to the University can often be combined with personal financial goals to produce maximum financial security, as well as significant tax savings for an individual or family.

The legal name of the University is "Northeastern University." In making a gift or bequest, it is recommended the following wording be used: "Northeastern University, an educational institution incorporated under the laws of Massachusetts and located in Boston, Massachusetts."

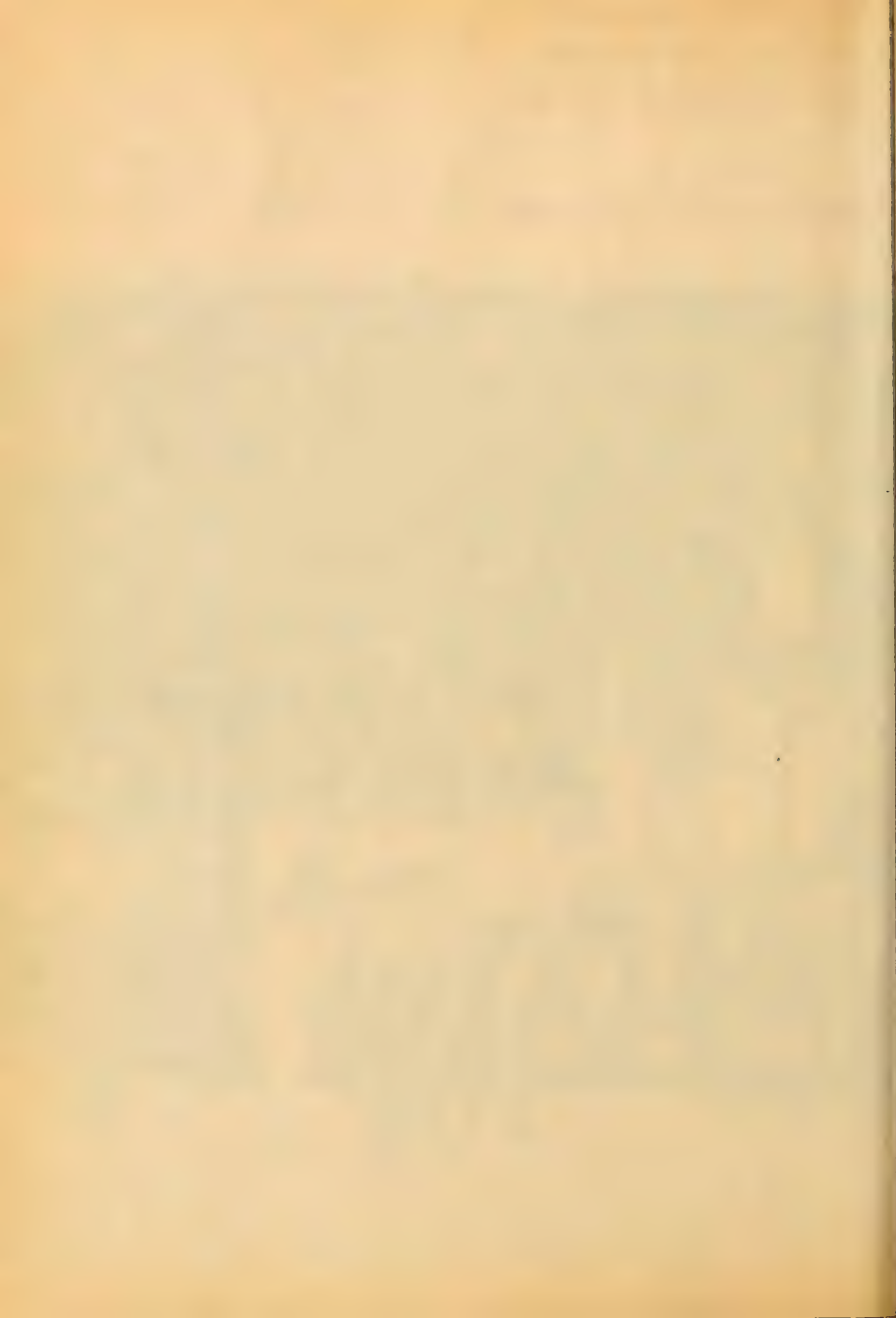
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1979 - 1980
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Course Descriptions
and Curriculum Guide

Northeastern University





1979 - 1980 Basic Day Colleges Course Descriptions and Curriculum Guide

College of Arts and Sciences
Boston-Bouvê College
College of Business Administration
College of Criminal Justice
College of Education
College of Engineering
Lincoln College
College of Nursing
College of Pharmacy and
Allied Health Professions

Northeastern University

Northeastern University charges tuition for all courses taken above the normal academic load.

The University reserves the right to make changes in the regulations and courses announced in this bulletin.

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Delivery of Services

The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing educational or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, which causes include, without limitation, power failure, fire, strikes by University employees or others, damage by the elements and acts of public authorities. The University will, however, exert reasonable efforts, when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities or performance, but its inability or failure to do so shall not subject it to liability.

Equal Opportunity Policy

Northeastern University is committed to a policy of providing equal opportunity for all. In all matters involving admissions, registration, and all official relationships with students, including evaluation of academic performance, the University insists on a policy of nondiscrimination. Northeastern University is also an equal opportunity employer; it is institutional policy that there shall not be any discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or on the basis of being a handicapped but otherwise qualified individual. In addition, Northeastern takes affirmative action in the recruitment of students and employees. Inquiries concerning our equal opportunity policies may be referred to the University Affirmative Action Officer and/or the Title IX coordinator.

Day Care Center

Northeastern University operates a Day Care Center in 123 Forsyth Building; the center academically housed in the College of Education's Department of Curriculum and Instruction. Children from age 2 years and 9 months to 6 years are eligible. For further information, phone 437-3929.

College of Arts and Sciences

The following models illustrate the kinds of curricula from which an upperclass student in the College of Arts and Sciences may select his/her program. Since the College offers programs leading to two degrees in most majors—the Bachelor of Arts and the Bachelor of Science—students should discuss their academic needs and goals with departmental faculty advisers and counselors in the College to determine the programs most appropriate for them.

Generally, the Bachelor of Science requires greater concentration in the major field of study. Requirements for the Bachelor of Arts degree include minimum "distribution requirements" (courses in the humanities, social sciences, science/mathematics) and completion of a modern foreign language through the intermediate level.

Other programs available include an interdisciplinary major in Human Services which is described in the University *Bulletin* and an Independent major, whereby a student may, with guidance, design his/her own major. Information about these and all other programs is available in the Dean's Office.

College of Arts and Sciences Junior-Senior Honors Program

The junior-senior program provides an opportunity for honors work under the supervision of a faculty adviser during two or three of the last four quarters of the student's program. Such a program usually entails a special research project culminating in an honors thesis.

Standards for eligibility in the honors program are:

Minimum average of 3.5 through the seventh quarter*

No F's or I's

No C's or D's in major field

Exceptions may be made with the approval of the major department and the Honors Committee.

During two or three of the four quarters preceding graduation, the honors participant must complete eight to twelve quarter hours of honors work. No more than four quarter hours of honors work may be taken each term unless the Honors Committee grants special permission. Students must register in their departments for the appropriately numbered honors course for which they will receive a grade from their advisers at the end of each term. The Honors Committee and the student's major department will insist that the student's honors work remain consistently excellent. Should the work fall below standard, the program will be subject to review and possible termination.

Students are invited or may request to participate. Written application for this program must be submitted to the Dean's Office. This application is reviewed by the Honors Committee and approval is based on the merits of the individual proposal. For information regarding eligibility or completion of the application, a student should consult an adviser in the Dean's Office.

*Applicable only to freshmen and transfer students who entered in the Fall of 1978 or later. Students who entered prior to the Fall of 1978 must have a minimum of 3.0.

African-American Studies

Bachelor of Arts

Bachelor of Science

African-American Studies majors may study for either the Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) degree. All majors are required to take the following subjects:

- 25.102 Educational Issues
- 25.100 Black Americans in Science, Technology, and Medicine
- 25.103 Educational Issues and Minority Communities II
- 25.209 Race Relations in America
- 25.170 Economic Issues in Minority Communities
- 25.210 Contemporary Issues in Black Society
- 25.246 Contemporary Black Political Movements
- 25.195 Directed Study for Senior Thesis
- 25.194 Field Seminar for Seniors

Foreign language and distribution requirements for B.A.

Faculty advisers work with students to help them select electives.

Art

Bachelor of Arts

27.118, 119, History of Art I and II; twelve art electives; two history electives; one music elective; one philosophy elective.

Foreign language and distribution requirements.

Bachelor of Science

27.118, 119, History of Art I and II; twelve art history electives; two history electives; one music elective; one philosophy elective.

Concentration in Personal Performance

Bachelor of Arts

Required Courses: 29.129, Introduction to Communication Skills; 29.110, Voice and Articulation; 29.111, Oral Interpretation; 29.108, Business & Professional Speaking; 29.105, Argumentation and Debate; 29.112, Advanced Vocal Techniques or 29.114, Advanced Oral Interpretation; 29.290, Directed Study; six speech communication electives;

College of Arts and Sciences distribution and foreign language requirements.

Bachelor of Science

Required Courses: 29.129, Introduction to Communication Skills; 29.119, Introduction to Communication Theory; 29.110, Voice and Articulation; 29.111, Oral Interpretation; 29.290, Directed Study; eight speech communication electives selected from the following: 29.105, Argumentation and Debate; 29.108, Business & Professional Speaking; 29.112, Advanced Vocal Techniques; 29.114, Advanced Oral Interpretation; 29.115, Theories of Persuasion; 29.116, Persuasive Techniques; 29.117, Group Discussion; 29.118, Communication in Education; 29.124, Reader's Theatre; 29.127, The Mass and the Media; 29.128, Contemporary Public Address; 29.133, Theories of Audience Behavior; 29.140, Consultation Skills; 29.141, Interpersonal Communication I; 29.142, Interpersonal Communication II; 29.143, Female/Male Communication; 29.281, Introduction to Communication Research; 30.120, Introduction to Linguistics; 30.130, Introduction to Semantics; 26.150, Introduction to Logic; in addition, the student must complete not less than four courses taught outside the Department, selected in consultation with his/her advisor on the basis of their value to the student's proposed post-graduate activities, and approved by the Speech Communication Curriculum Committee.

College of Arts and Sciences distribution requirements; no language requirement.

Biology

Bachelor of Arts

18.131, General Biology; 18.132, Animal Biology; 18.133, Plant Biology; 18.134, Environmental and Population Biology; 18.135, Genetics and Developmental Biology; 18.136, Cell Physiology and Biochemistry (formerly Cell Biology); four biology electives approved by departmental Advisory Committee.

Fundamentals of Mathematics or Calculus (one year); 11.171, 172, Physics for the Life Sciences I and II; 11.173, 174, Physics Laboratory for the Life Sciences I and II or 11.117, Physics for Science Majors I; 11.119, Physics for Science Majors III; 11.147, 149, Physics Laboratory for Science Majors I and III; 12.106, 107, General Chemistry I and II; 12.171, Analytical Chemistry; 12.144, 145, Organic Chemistry I and II.

Foreign language and distribution requirements.

Bachelor of Science

18.131, General Biology; 18.132, Animal Biology; 18.133, Plant Biology; 18.134, Environmental and Population Biology; 18.135, Genetics and Developmental Biology; 18.136, Cell Physiology and Biochemistry (formerly Cell Biology); 18.280, Senior Seminar; four biology electives approved by departmental Advisory Committee.

Calculus (one year); 11.117, 118, 119, Physics for Science Majors I, II and III; 11.147 and 11.148 or 11.149, Physics Laboratory for Science Majors I and II or III; 12.106, 107, General Chemistry I and II; 12.171, Analytical Chemistry; 12.144, 145, Organic Chemistry I and II; two approved advanced science electives.

Foreign language requirement.

Chemistry

Bachelor of Arts

12.127, 128, General Chemistry I and II; 12.129, The Chemical Elements; 12.172, Analytical Chemistry; 12.153, 154, 155, Organic Chemistry I, II, and III; 12.161, 162, 168, Physical Chemistry I, II, and III; 12.183, Principles of Experimental Chemistry; 12.179, Instrumental Analysis.

10.181, 182, 183, Calculus I, II, and III; 11.117, 118, 119, Physics for Science Majors I, II, and III; 11.148, 149, Physics Laboratory for Science Majors II and III.

Foreign language and distribution requirements.

Bachelor of Science

12.127, 128, General Chemistry I and II; 12.129, The Chemical Elements; 12.172, Analytical Chemistry; 12.153, 154, 155, Organic Chemistry I, II, and III; 12.161, 162, 168, Physical Chemistry I, II, and III; 12.183, Principles of Experimental Chemistry; 12.179, Instrumental Analysis; 12.213, Inorganic Chemistry; 12.253, Identification of Organic Compounds; two advanced science or mathematics electives; one advanced laboratory.

10.181, 182, 183, Calculus I, II, and III; 10.207, Differential Equations; 11.117, 118, 119, Physics for Science Majors I, II, and III; 11.148, 149, Physics Laboratory for Science Majors II and III.

Drama

Bachelor of Arts

29.109, Speech for the Theatre; 29.110, Voice and Articulation; 29.150, Elementary Acting I; 29.160, Concepts of Direction; 29.170, Stagecraft; 29.200, 201, History of the Theatre I and II; 29.164, 165, 166, 167, Theatre Practicum; eight drama electives.

Eight quarter hours psychology or four quarter hours each anthropology and sociology.

Foreign language and distribution requirements.

In addition, the Department recommends that a physical education skills course be selected each quarter.

Bachelor of Science

29.109, Speech for the Theatre; 29.110, Voice and Articulation; 29.150, Elementary Acting I; 29.160, Concepts of Direction; 29.170, Stagecraft; 29.200, 201, History of the Theatre I and II; 29.164, 165, 166, 167, Theatre Practicum; eight drama electives.

In addition, the Department recommends that a Physical Education skills course be selected each quarter.

Economics

Bachelor of Arts

39.115, 116, Principles and Problems of Economics I and II; 39.250, 251, Statistics I and II; 39.255, Microeconomic Theory; 39.256, Macroeconomic Theory; six economics electives.

10.104, 105, Fundamentals of Mathematics I and II; four social science electives other than Economics.

Foreign language and distribution requirements.

Bachelor of Science

39.115, 116, Principles and Problems of Economics I and II; 39.250, 251, Statistics I and II; 39.255, Microeconomic Theory; 39.256, Macroeconomic Theory; 39.293, Introduction to Econometrics or 39.294, Problems in Economic Research; ten economics electives.

10.104, 105, Fundamentals of Mathematics I and II; four social science electives other than economics.

Minor in Economics

39.115, 116, Principles and Problems of Economics I and II; 39.255, Microeconomic Theory; 39.256, Macroeconomic Theory; four electives in economics. Electives to be selected with the advice of a Department adviser. Any course taken outside the Department of Economics to satisfy these economics-elected requirements must be approved by a faculty adviser in the Department.

English

Bachelor of Arts

30.170, 30.171 Survey of English Literature I and II; either 30.180 or 30.181, Survey of American Literature I or II; one British literature course; one American literature course; one figure course; one genre course; one language and writing course; one junior-senior seminar; four English electives.

Foreign language and distribution requirements.

Bachelor of Science

30.110, Literary Analysis of Poetry; 30.120, Introduction to Linguistics or 30.121, Foundations of the English Language; 30.170, 171, Survey of English Literature I and II; two American literature courses*; 30.222 or 223, Chaucer I or II or 30.218, Medieval Literature*; 30.250 or 251, Shakespeare*; 18th Century English Literature or period figure course*; 19th Century English Literature or period figure course*; one Seminar*; four English electives; 23.130, 131, England to 1688 and England since 1688.

Distribution requirements as required for the Bachelor of Arts program.

*The Seminar may be substituted for a period or figure course, thus adding one English elective.

Geology

Bachelor of Arts

16.201, Physical Geology; 16.203, Physical Geology Laboratory; 16.202, Historical Geology; 16.204, Historical Geology Laboratory; 16.211, Descriptive Mineralogy; 16.212, Optical Crystallography; 16.213, Optical Mineralogy; 16.271, Geology Seminar; six geology electives.

10.104, 105, Fundamentals of Mathematics I and II or 10.105, 107, Calculus I and II; 11.117, Physics for Science Majors I or 11.171, Physics for the Life Sciences I; 12.106, 107, General Chemistry I and II.

Foreign language and distribution requirements.

Bachelor of Science

16.201, Physical Geology; 16.203, Physical Geology Laboratory; 16.202, Historical Geology; 16.204, Historical Geology Laboratory; 16.211, Descriptive Mineralogy; 16.212, Optical Crystallography; 16.213, Optical Mineralogy; 16.271, Geology Seminar; eight geology electives.

10.105, 107, Calculus I and II or 10.150, 151, 152, Calculus I, II and III; 11.117, 118, 119, Physics for Science Majors I, II, and III; 12.106, 107 or 12.103, 104, General Chemistry I and II; 12.105 or 12.171, Analytical Chemistry or 12.161, Physical Chemistry or 16.214, Geochemistry; two approved additional science electives; six courses in the humanities and/or social sciences.

History

Bachelor of Arts

23.101, 102, Western Civilization I and II; 23.210, 211, United States to 1877 and United States since 1877; 23.199, The Historian's Craft; ten history electives distributed as follows: two courses in Group A (ancient, medieval, early modern Europe); two courses in Group B (modern Europe); two courses in Group C (America); two courses in Group D (other regions); two courses in any of the above groups.

Foreign language and distribution requirements.

Recommended: courses in the related social sciences.

Bachelor of Science

23.101, 102, Western Civilization I and II; 23.210, 211, United States to 1877 and United States since 1877; 23.199, The Historian's Craft; 23.200, Social Science Methodology; twelve history electives distributed as follows: two courses in Group A (ancient, medieval, early modern Europe); two courses in Group B (modern Europe); two courses in Group C (America); two courses in Group D (other regions); four courses in any of the above groups.

One course in Introductory Statistics (e.g., 19.120, 21.239, 39.250); one course in computers from the following: 10.108, Probability, Statistics, and the Computer; 10.130, Introduction to Computers and Computations; 93.113, Computers for the Social Sciences; three of the following: 39.115, Principles of Economics; 21.100, Introduction to Sociology; 20.100, Principles of Social Anthropology; 22.110, Introduction to Politics; 19.105, Foundations of Psychology; 18.119, Environment and Man. (Substitutions only with approval of the Department Chairperson.)

Human Services

Bachelor of Arts

Prerequisite Courses: 19.105, 106, Foundations of Psychology I and II; 19.120, Statistics in Psychology or 21.239, Introduction to Sociological Statistical Analysis; 21.100, Introduction to Sociology; 22.111, Introduction to American Government; 39.116, Principles and Problems of Economics II; 50.166, Introduction to Human Service Professions.

Core Courses: 19.135, 202, 203, Personality I and Abnormal Psychology I and II; 50.267, Personality and Social Structure; 21.200, 201, Group Behavior—The Sociological Imagination or 29.141, Interpersonal Communication and 29.117, Group Discussion; ONE of these: 21.118, Population and Society or 21.145, Urban Society or 21.245, Community Analysis.

21.157, Sociology of Human Services Organizations; 56.150, Introduction to Rehabilitation; 56.951, Medical Rehabilitation*; 53.804, Theories

of Counseling; 93.230, 93.231, Field Course I and II; 21.125, The Sociology of Private and Public Assistance or 21.221, Seminar in Social Welfare.

Approved four-course concentration.

Foreign language and distribution requirements.

*Students must petition College of Education for prior approval.

Independent Major

A student may petition the Dean of the College to meet the requirements for the B.A. degree in an Independent Major if he/she can demonstrate that none of the established majors offers academic preparation for his/her professional goals. The petition shall include a proposed program and the endorsement of a faculty adviser. Requirements for the major should be discussed in advance with a counselor in the Dean's Office. No student may be considered an Independent Major until the proposal has been submitted to and approved by the Curriculum Committee of the College.

Journalism

Bachelor of Arts

38.101, 102, History and Principles of Journalism I and II; 38.103, 104, Fundamentals of Newswriting I and II; 38.105, 106, Techniques of Journalism I and II; 38.107, 108, Press and Society I and II.

23.210, 211, United States to 1877 and United States since 1877; two history electives; 30.170, 171, Survey of English Literature I and II; *30.103, Grammar for Journalists; two English electives; two political science electives; 39.115, 116, Principles and Problems of Economics I and II.

Foreign language and distribution requirements.

Bachelor of Science

38.101, 102, History and Principles of Journalism I and II; 38.103, 104, Fundamentals of Newswriting I and II; 38.105, 106, Techniques of Journalism I and II; 38.107, 108, Press and Society I and II.

23.210, 211, United States to 1877 and United States since 1877; two history electives; 30.170, 171, Survey of English Literature I and II; *30.103, Grammar for Journalists; two English electives; 39.115, 116, Principles and Problems of Economics I and II; six mathematics and/or science electives; two political science electives.

*Required for freshmen and transfer students entering in fall 1978 and all subsequent quarters.

Mathematics

Bachelor of Arts

10.181, 182, 183, Calculus I, II, and III; 10.184, 185, Calculus and Linear Methods I and II; 10.186, 187, Differential Equations and Linear Methods I and II; 10.246 Linear Algebra and 10.250 Analysis I; four approved mathematics electives selected in consultation with an adviser.

11.117, 118, 119, Physics for Science Majors I, II, and III.

Foreign language and distribution requirements.

Bachelor of Science

10.181, 182, 183, Calculus I, II, and III; 10.184, 185, Calculus and Linear Methods I and II; 10.186, 187, Differential Equations and Linear Methods I and II; 10.246 Linear Algebra and 10.250 Analysis I; seven approved mathematics electives selected in consultation with an adviser.

11.117, 118, 119, Physics for Science Majors I, II, and III; two non-science courses.

Concentration in Computer Science

Bachelor of Science

10.181, 182, 183, Calculus I, II and III; 18.184, Calculus and Linear Methods I; 10.186, Differential Equations and Linear Methods I or 10.155, Mathematical Analysis I; 10.130, Introduction to Computers and Computation; 10.131, Introduction to Computer Science; 10.214, Computer Organization and Programming; 10.215, Information Structures; five approved mathematics electives selected in consultation with an adviser.
11.117, 118, 119, Physics for Science Majors I, II, and III; two non-science courses.

Modern Languages

Bachelor of Arts

Eight advanced electives in the major language;* two advanced electives in the minor language.*

30. 170, 171, Survey of English Literature I and II; 23.101, 102, Western Civilization I and II; two additional history electives.

Distribution requirements.

Bachelor of Science

Twelve advanced electives in the major language* including two conversation and composition courses; six advanced electives in the minor language* including two conversation and composition courses.

23.101, 102, Western Civilization I and II.

*Courses beyond the intermediate level.

Philosophy

Bachelor of Arts

26.110, Classic Greek Philosophers; 26.111, Modern Philosophy; 26.150, Introduction to Logic or 26.151, Symbolic Logic; 26.152, Theory of Knowledge or 26.153, Metaphysics or 26.155, Moral Philosophy; one philosophy seminar; eight philosophy electives.

Foreign language and distribution requirements.

Bachelor of Science

26.110, Classic Greek Philosophers; 26.111, Modern Philosophy; 26.150, Introduction to Logic or 26.151, Symbolic Logic; 26.152, Theory of Knowledge or 26.153, Metaphysics or 26.155, Moral Philosophy; one philosophy seminar; eight philosophy electives.

Minor in Philosophy

To qualify for a minor in philosophy, a student must take 28 credit hours in philosophy. These will be distributed as follows:

INTRODUCTORY COURSES: 26.101, Introduction to Philosophy I or 26.102, Introduction to Philosophy II or 26.105, Introduction to Scientific Method; HISTORY OF PHILOSOPHY: 26.110, Classical Greek Philosophy or 26.111, Modern Philosophy; LOGIC REQUIREMENT: 26.150, Introduction to Logic or 26.151, Symbolic Logic; and at least one of the following courses: 12.125 Philosophy of Mind, 26.152 Theory of Knowledge, 26.153 Metaphysics, 26.155 Moral Philosophy; Electives: Three electives in philosophy.

Physics

Bachelor of Arts

11.117, 118, 119, Physics for Science Majors, I, II, and III, and their associated laboratories 11.147, 148, 149; 11.127, Intermediate

Mechanics; 11.128, Electric and Magnetic Fields; three upper-level physics lecture courses; three upper-level physics laboratory courses.

10.181, 182, 183, Calculus I, II, and III; 10.184, 185, Calculus and Linear Methods I and II; one advanced mathematics elective.

Foreign language and distribution requirements.

Bachelor of Science

11.117, 118, 119, Physics for Science Majors I, II, and III, and their associated laboratories 11.147, 148, 149; 11.127, Intermediate Mechanics; 11.128, Electric and Magnetic Fields; 11.208, Mathematical Physics; 11.220, Wave Motion and Optics; 11.230, Modern Physics; 11.200, Classical Mechanics; 11.211, 212, Electricity and Magnetism I and II; three upper-level physics laboratory courses.

10.181, 182, 183, Calculus I, II, and III; 10.184, 185, Calculus and Linear Methods I and II; two advanced mathematics electives; five additional electives from those approved for majors in the following fields: physics, mathematics, chemistry, engineering, biology, and geology.

Political Science

Bachelor of Arts

22.110, Introduction to Politics; 22.111, Introduction to American Government; 22.112, Introduction to International Relations; 22.113, Introduction to Foreign Governments and Societies (formerly titled Introduction to Comparative Politics); 22.261, Public Administration; one political theory/thought course selected from the following: 22.270, 22.273, 22.274; seven political science electives.

Six social science electives selected from at least three of the following areas: African-American studies, anthropology, economics, history, psychology, and sociology.

Foreign language and distribution requirements.

Bachelor of Science

22.110, Introduction to Politics; 22.111, Introduction to American Government; 22.112, Introduction to International Relations; 22.113, Introduction to Foreign Governments and Societies (formerly titled Introduction to Comparative Politics); *22.121, Research Methods I; *22.122, Research Methods II; 22.261, Public Administration; and one political theory/thought course selected from the following: 22.270, 22.273, 22.274; six political science electives.

Six social science electives selected from at least three of the following areas: African-American studies, anthropology, economics, history, psychology, and sociology.

*22.121 and 122 replace 22.280, 281, and 286.

*Replaces 22.280

Minor in Political Science

Any two of the following courses: 22.110 Introduction to Politics, 22.111 Introduction to American Government, 22.112 Introduction to International Relations, 22.113 Introduction to Foreign Governments and Societies, 22.261 Public Administration; any five additional courses offered by the Department of Political Science for Political Science majors, including courses listed above that have not been selected to fulfill the above requirement.

Concentration in Public Administration

Bachelor of Science

22.110, Introduction to Politics; 22.111, Introduction to American Government; *22.121, Research Methods I; **22.122, Research Methods II; 22.260, Public Policy Analysis; 22.261, Public Administration; 22.266, Public Personnel Administration; 22.267, Public Budgeting; ***22.262, Organization Theory; and one political theory/thought course selected

from the following: 22.270, 22.273, 22.274; four Public Administration electives.

Six social science electives selected from at least three of the following areas: African-American studies, anthropology, economics, history, psychology, and sociology.

*Replaces 22.281.

**New degree requirement for students entering or transferring into Northeastern in fall 1975 or later.

***New degree requirement for students entering or transferring into Northeastern in fall 1977 or later.

Psychology

Concentration in General Psychology

Bachelor of Arts

General Requirements: Freshman and Arts and Sciences distribution requirements; 19.105, Foundations of Psychology I; 19.106, Foundations of Psychology II; 23.101, Western Civilization I; or 23.102, Western Civilization II; 19.120, Statistics in Behavioral Science I; 19.121, Statistics in Behavioral Science II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: At least four psychology electives.

Laboratory Courses: Three courses from: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; 19.160, Experimental Design in Psychology; 19.162, Sensation and Perception Laboratory; 19.165, Learning Laboratory; 19.171, Behavior Modification Laboratory; 19.181, Laboratory in Physiological Psychology; 19.188, Sensory Physiology Laboratory; 19.195, Laboratory in Psycholinguistics.

Seminars: One from: 19.166, Seminar in Programmed Instruction; 19.270, Seminar in Behavior Theory; 19.271, Seminar in Cognition; 19.272, Seminar in Language and Language Behavior; 19.273, Seminar in Clinical Psychology and Personality; 19.274, Seminar in Sensory and Physiological Psychology; 19.275, Seminar in Social Psychology; 19.276, Seminar in Behavior Modification.

Bachelor of Science

General Requirements: Freshman distribution requirements; three additional courses in biology, chemistry, mathematics or physics, including at least one of the following: 18.131, General Biology; 12.106, General Chemistry; 11.171, Physics for the Life Sciences I; 19.105, Foundations of Psychology I; 19.106, Foundations of Psychology II; 19.120, Statistics in Behavioral Science I; 19.121, Statistics in Behavioral Science II; 23.101, Western Civilization I or 23.102, Western Civilization II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: Six psychology electives.

Laboratory Courses: Select four from the following: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; 19.160, Experimental Design in Psychology; 19.162, Sensation and Perception Laboratory; 19.165, Learning Laboratory; 19.171, Behavior Modification Laboratory; 19.181, Laboratory in Physiological Psychology; 19.188, Sensory Physiology Laboratory; 19.195, Laboratory in Psycholinguistics.

Concentration in Language and Cognition

Bachelor of Arts

General Requirements: Freshman and Arts and Sciences distribution requirements; 19.105, Foundations of Psychology I; 19.106, Foundations of Psychology II; 23.101, Western Civilization I; or 23.102, Western Civilization II; 19.120, Statistics in Behavioral Science I; 19.121, Statistics in Behavioral Science II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: Two psychology electives; 19.151, Bilingualism; 19.152, Introduction to Phonetics.

Laboratory Courses: 19.195, Laboratory in Psycholinguistics; 19.290, Directed Study in Psychology, one from the following: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; 19.160, Experimental Design in Psychology; 19.162, Sensation and Perception Laboratory; 19.165, Learning Laboratory; 19.171, Behavior Modification Laboratory; 19.181, Laboratory in Physiological Psychology; 19.188, Sensory Physiology Laboratory.

Seminars: Either 19.271, Seminar in Cognition or 19.272, Seminar in Language and Language Behavior.

Bachelor of Science

General Requirements: Freshman distribution requirements; three additional courses in biology, chemistry, mathematics or physics, including at least one of the following: 18.131, General Biology; 12.106, General Chemistry; 11.171, Physics for the Life Sciences I; 19.105, Foundations of Psychology I; 19.106, Foundations of Psychology II; 19.120, Statistics in Behavioral Science I; 19.121, Statistics in Behavioral Science II; 23.101, Western Civilization I or 23.102, Western Civilization II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: 19.151, Bilingualism; 19.152, Introduction to Phonetics; 30.120, Introduction to Linguistics; three psychology electives.

Laboratory Courses: 19.195, Laboratory in Psycholinguistics; 19.290, Directed Study in Psychology; two from the following: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; 19.160, Experimental Design in Psychology; 19.162, Sensation and Perception Laboratory; 19.165, Learning Laboratory; 19.171, Behavior Modification Laboratory; 19.181, Laboratory in Physiological Psychology; 19.188, Sensory Physiology Laboratory.

Directed Study or Honors Research: One from the following: 19.290-294, Directed Study in Psychology or 19.295-299, Junior-Senior Honors Program.

Seminars: 19.271, Seminar in Cognition or 19.272 Seminar in Language and Language Behavior.

Concentration in Learning and Behavior Modification

Bachelor of Arts

General Requirements: Freshman and Arts and Sciences distribution requirements; 19.105, Foundation of Psychology I; 19.106, Foundations of Psychology II; 19.120, Statistics in Behavioral Science I; 19.121, Statistics in Behavioral Science II; 23.101, Western Civilization I or 23.102, Western Civilization II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: 19.168, Behavior change in Institutions; 19.169 Selected Topics in Behavioral Analysis; One of: 19.250-268 (even numbers) PSI Teaching Practica; one of: 19.251-269 (odd numbers) Advanced PSI Teaching Practica.

Laboratory Courses: 19.165, Learning Laboratory; 19.171, Behavior Modification Laboratory; one from the following: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; 19.160, Experimental Design in Psychology; 19.162, Sensation and Perception Laboratory; 19.181, Laboratory in Physiological Psychology; 19.188, Sensory Physiology Laboratory; 19.195, Laboratory in Psycholinguistics.

Seminars: One from: 19.166, Seminar in Programmed Instruction; 19.270, Seminar in Behavior Theory; 19.276, Seminar in Behavior Modification.

Bachelor of Science

General Requirements: Freshman distribution requirements; three additional courses in biology, chemistry, mathematics or physics, including at least one of the following: 18.131, General Biology; 12.106, General Chemistry; 11.171, Physics for the Life Sciences I; 19.105, Foundations of Psychology I; 19.106, Foundations of Psychology II; 19.120, Statistics in Behavioral Science I; 19.121, Statistics in Behavioral Science II; 23.101, Western Civilization I or 23.102, Western Civilization II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: 19.168, Behavior Change in Institutions; 19.169, Selected Topics in Behavioral Analysis; one of: 19.250-268 (even numbers), PSI Teaching Practica; one of: 19.251-269 (odd numbers) Advanced PSI Teaching Practica; two psychology electives.

Laboratory Courses: 19.165, Learning Laboratory; 19.171, Behavior Modification Laboratory; two from: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; 19.160, Experimental Design in Psychology; 19.162, Sensation and Perception Laboratory; 19.181, Laboratory in Physiological Psychology; 19.188, Sensory Physiology Laboratory; 19.195, Laboratory in Psycholinguistics.

Directed Study or Honors Research: One from 19.290-19.294, Directed Study in Psychology or 19.295-19.299, Junior-Senior Honors Program.

Seminars: One from: 19.166, Seminar in Programmed Instruction; 19.270, Seminar in Behavior Theory; 19.276, Seminar in Behavior Modification.

Concentration in Personality and Social

Bachelor of Arts

General Requirements: Freshman and Arts and Sciences distribution requirements; 19.105, Foundations of Psychology I; 19.106, Foundations of Psychology II; 19.120, Statistics in Behavioral Science I; 19.121, Statistics in Behavioral Science II; 23.101, Western Civilization I or 23.102, Western Civilization II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: 19.130, Social Psychology I, or 19.135, Personality I; 19.136, Personality II; 21.107, Social Psychology II; two from: 20.151, Aggression; 20.160, Sex, Sex Roles, and Family; 21.151, Sociology of Prejudice; 29.115, Theories of Persuasion.

Laboratory Courses: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; two from: 19.160, Experimental Design in Psychology; 19.162, Sensation and Perception Laboratory; 19.165, Learning Laboratory; 19.171, Behavior Modification Laboratory; 19.181, Laboratory in Physiological Psychology; 19.188, Sensory Physiology Laboratory; 19.195, Laboratory in Psycholinguistics.

Seminars: One from: 19.275, Seminar in Social Psychology; 19.273, Seminar in Clinical Psychology and Personality; 21.107, Seminar in Social Psychology.

Bachelor of Science

General Requirements: Freshman distribution requirements; three additional courses in biology, chemistry, mathematics or physics, including at least one of the following: 18.131, General Biology; 12.106, General Chemistry; 11.171, Physics for the Life Sciences I; 19.105, Foundations of Psychology I; 19.106, Foundations of Psychology II; 19.120, Statistics in Behavioral Science I; 19.121, Statistics in Behavioral Science II; 23.101, Western Civilization I or 23.102, Western Civilization II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: 19.135 Personality I or 19.130 Social Psychology I; 19.136, Personality II; 19.186, Comparative Psychology and Ethology; 21.107, Social Psychology II; two from: 20.151, Aggression; 20.160, Sex, Sex Roles, and Family; 21.151, Sociology of Prejudice; 29.115, Theories of Persuasion.

Laboratory Courses: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; three from: 19.160, Experimental Design in Psychology; 19.162, Sensation and Perception Laboratory; 19.165, Learning Laboratory; 19.171, Behavior Modification Laboratory; 19.181, Laboratory in Physiological Psychology; 19.188, Sensory Physiology Laboratory; 19.195, Laboratory in Psycholinguistics.

Directed Study or Honors Research: One from: 19.290-19.294, Directed Study in Psychology or 19.295-19.299, Junior-Senior Honors Program.

Seminars: One from 19.275, Seminar in Social Psychology; 19.273, Seminar in Clinical Psychology and Personality, 21.207, Seminar in Social Psychology.

Concentration in Sensory and Neuropsychology

Bachelor of Arts

General Requirements: Freshman and Arts and Sciences distribution requirements; 19.105, Foundations of Psychology I; 19.106, Foundations of Psychology II; 19.120, Statistics in Behavioral Science I; 19.121 Statistics in Behavioral Science II; 23.101, Western Civilization I or 23.102, Western Civilization II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: 19.149, Sensation or 19.150, Perception; 19.179, Physiological Basis of Psychology II; 19.180, Neuropsychology; 19.183, Biological Basis of Motivation or 19.186, Comparative Psychology and Ethology.

Laboratory Courses: 19.162, Sensation and Perception Laboratory; 19.181, Laboratory in Physiological Psychology; one from the following: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; 19.160, Experimental Design in Psychology; 19.165, Learning Laboratory; 19.171 Behavior Modification Laboratory; 19.188, Sensory Physiology Laboratory; 19.195, Laboratory in Psycholinguistics.

Bachelor of Science

Seminars: 19.274, Seminar in Sensory and Physiological Psychology.

General Requirements: Freshman distribution requirements; three additional courses in biology, chemistry, mathematics or physics, including at least one of the following: 18.131, General Biology; 12.106, General Chemistry; 11.171, Physics for the Life Sciences I; 19.105, Foundations of Psychology I; 19.106, Foundations of Psychology II; 19.120, Statistics in Behavioral Science I; 19.121, Statistics in Behavior Science II; 23.101, Western Civilization I or 23.102, Western Civilization II.

Introductory Specialty Courses: 19.130, Social Psychology I or 19.135, Personality I; 19.149, Sensation or 19.150, Perception; 19.155, Language and Cognition; 19.164, Learning and Motivation; 19.178, Physiological Basis of Psychology I.

Intermediate Courses: 19.149, Sensation or 19.150 Perception; 19.179, Physiological Basis of Psychology II; 19.180, Neuropsychology; 19.183, Biological Bases of Motivation or 19.186, Comparative Psychology and Ethology; two psychology electives.

Laboratory Courses: 19.162, Sensation and Perception Laboratory; 19.181, Laboratory in Physiological Psychology; two from: 19.133, Laboratory in Social Psychology or 19.138, Laboratory in Experimental Personality; 19.160, Experimental Design in Psychology; 19.165, Learning Laboratory; 19.171, Behavior Modification Laboratory; 19.188, Sensory Physiology Laboratory; 19.195, Laboratory in Psycholinguistics.

Directed Study or Honors Research: One from: 19.290-19.294, Directed Study in Psychology or 19.295-19.299, Junior-Senior Honors Program.

Seminar: 19.274, Seminar in Sensory and Physiological Psychology.

Linguistics Program

The department also offers a program in Linguistics.

General Requirements: Freshman and Arts and Sciences distribution requirements; 30.120, Introduction to Linguistics; 19.155, Language and Cognition; 19.152, Introduction to Phonetics; 20.130, Language and Culture; 33.235, Applied Linguistics; 30.125, Grammars of English.

Second Language Requirement: Arts and Sciences foreign language requirement (through Intermediate II) plus two advanced courses (spoken or signed language).

Intermediate Courses: Five from the following: 19.151, Bilingualism; 19.153, Child Language; 19.154, Linguistics of American Sign Language; 19.182, Neurolinguistics; 30.121, Foundations of the English language; 19.157, Cognition; 26.127, Philosophy of Language; 33.236, Advanced Applied Linguistics; 33.237, Language Testing; 26.151, Symbolic Logic; 30.130, Introduction to Semantics.

Laboratory Course: 19.195, Laboratory in Psycholinguistics.

Seminars: Two from the following: 19.272, Seminar in the Psychology of Language; 19.277, Seminar in Psycholinguistics (Speech Perception); 30.280, Seminar in Stylistics.

Practicum: One course (field work, interpreting, directed study, etc.).

Psychology Minors

Concentration in General Psychology

General Requirements: 19.105, 19.106, 19.120, 19.121.

Introductory Specialty Courses: 19.130 or 19.135, 19.149 or 19.150, 19.155, 19.164, 19.178.

Laboratory Courses: One from 19.133, 19.138, 19.160, 19.162, 19.165, 19.171, 19.181, 19.188, 19.195.

Concentration in Language and Cognition

General Requirements: 19.105, 19.106, 19.120, 19.121.

Introductory Specialty Courses: 19.155, 19.196.

Intermediate Courses: 19.151, 19.152, 19.156 or 19.157.

Laboratory Course: 19.195.

Concentration in Learning and Behavior Modification

General Requirements: 19.105, 19.106, 19.120, 19.121.

Introductory Specialty Courses: 19.141, 19.164.

Intermediate Courses: 19.149, 19.168, One of 19.250-19.268 (even numbers).

Laboratory Course: 19.165.

Concentration in Personality and Social

General Requirements: 19.105, 19.106, 19.120, 19.121.

Introductory Specialty Courses: 19.130, 19.135.

Intermediate Courses: 19.136, 19.202, 19.203.

Laboratory Courses: 19.133 or 19.138.

Concentration in Sensory and Neuropsychology

General Requirements: 19.105, 19.106, 19.120, 19.121.

Introductory Specialty Courses: 19.149, 19.178.

Intermediate Courses: 19.150, 19.179, or 19.180, 19.183 or 19.186.

Laboratory Courses: 19.162 or 19.181.

Sociology-Anthropology

Concentration in Sociology

Bachelor of Arts

Preparatory Requirements: 21.100, Introduction to Sociology and 20.100, Introduction to Anthropology. *Core Requirements:* 21.239, Introduction to Statistical Analysis; 21.240, 241, Research Methods I and II; 21.280, Classical Social Thought; 21.281, Current Social Thought; 21.270, Class, Power and Social Change (preferably in senior year). *Elective Requirements:* two intermediate courses (100 level); two advanced courses (200 level); one anthropology course beyond 20.100.

Six electives in the social sciences other than sociology-anthropology. Foreign language and distribution requirements.

Bachelor of Science

Preparatory Requirements: 21.100, Introduction to Sociology and 20.100, Introduction to Anthropology. *Core Requirements:* 21.239, Introduction to Statistical Analysis; 21.240, 241, Research Methods I and II; 21.280, Classical Social Thought; 21.281, Current Social Thought; 21.270, Class, Power and Social Change (preferably in senior year). *Elective Requirements:* two intermediate courses (100 level); two advanced courses (200 level); one anthropology course beyond 20.100.

Six electives in the social sciences other than sociology-anthropology. Approved six-course specialization.

Minor in Sociology

Requirements: 21.100, Introduction to Sociology; any two courses from among the following: 21.240, Research Methods I; 21.241, Research Methods II; 21.280, Classical Social Thought; 21.281, Current Social

Thought; and any three-course specialization in sociology arranged between the student and adviser.

Concentration in Anthropology

Bachelor of Arts

Preparatory Requirements: 20.100, Introduction to Anthropology and 21.100, Introduction to Sociology. *Core Requirements:* at least three of the following: 20.130, Language and Culture; 20.135, Individual and Culture; 20.240, Human Origins; 20.160, Sex, Sex Roles and Family; 20.170, Culture in Transition; 20.210, Tribal Society and Cultures; 20.214, Peasant Society and Culture; 20.257, Myth and Religion. *Elective Requirements:* at least six additional anthropology courses; one sociology elective.

Six electives in the social sciences other than sociology-anthropology. Foreign language and distribution requirements.

Bachelor of Science

Preparatory Requirements: 20.100, Introduction to Anthropology and 21.100, Introduction to Sociology. *Core Requirements:* at least three of the following: 20.130, Language and Culture; 20.135, Individual and Culture; 20.240, Human Origins; 20.160, Sex, Sex Roles and Family; 20.170, Culture in Transition; 20.210, Tribal Society and Cultures; 20.214, Peasant Society and Culture; 20.257, Myth and Religion. *Elective Requirements:* at least six additional anthropology courses; one sociology elective.

Six electives in the social sciences other than sociology-anthropology. Approved five-course specialization.

Speech Communications

Concentration in Group and Public Communication

Bachelor of Arts

Required Courses: 29.129, Introduction to Communication Skills; 29.119, Introduction to Communication Theory; 29.105, Argumentation and Debate or 29.117, Group Discussion; 29.141, Interpersonal Communication I; 29.115, Theories of Persuasion or 29.128, Contemporary Public Address; eight speech communication electives; 22.110, Introduction to Politics or 22.111, Introduction to American Government; 19.106, Foundations of Psychology II or 21.100, Introduction to Sociology; 19.130, Social Psychology or 21.107, Social Psychology.

The College of Arts and Sciences foreign language and distribution requirements.

Bachelor of Science

Required Courses: 29.129, Introduction to Communication Skills; 29.119, Introduction to Communication Theory; 29.141, Interpersonal Communication I; 29.117, Group Discussion; 29.115, Theories of Persuasion; 29.116, Persuasive Techniques; 29.281, Introduction to Communication Research; six speech communication electives to be chosen from the following: 29.105, Argumentation and Debate; 29.108, Business & Professional Speaking; 29.127, The Mass and the Media; 29.128, Contemporary Public Address; 29.133, Theories of Audience Behavior; 29.140, Consultation Skills; 29.142, Interpersonal Communication II; 29.143, Female/Male Communication; 30.120, Introduction to Linguistics; 30.130, Introduction to Semantics; 26.150, Introduction to Logic; eight social science credits beyond the introductory level, selected in consultation with the student's adviser and based upon their value to the student's post-graduate activities.

College of Arts and Sciences distribution requirements; no language requirement.

Directed Study or Honors Research: One from the following: 19.290-294, Directed Study in Psychology or 19.295-19.299, Junior-Senior Honors Program.

Seminars: Select one from the following: 19.166, Seminar in Programmed Instruction; 19.270, Seminar in Behavior Theory; 19.271, Seminar in Cognition; 19.272, Seminar in Language and Language Behavior; 19.273, Seminar in Clinical Psychology and Personality; 19.274, Seminar in Sensory and Physiological Psychology; 19.275, Seminar in Social Psychology; 19.276, Seminar in Behavior Modification.

Boston-Bouvé College

Specimen Program in Physical Education

First Year

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
18.141	Biology I	4	62.202	Life/Career Plan*	3	10.104	Math	4
30.113	Fresh. Writ.	4	18.142	Biology II or		62.206	First Aid*	2
50.114	Soc. Sci.	4	12.106	Chem. or		65.130	Health Problems	3
62.200	Hum. Movt.*	3	11.171	Physics	4	62.205	Grp. Dynamics*	3
62.13V	Gymnastics I	1	30.114	English	4	62.209	Hist./Phil. PE*	3
62.17J	Volleyball	1		Elective	4	62.16L	Track & Field	1
			62.13Y	Gymnastics II	1	62.12P	Rhythmics	1
			62.17C	Basketball	1			

Second Year

Quarter 4			Quarter 5		
No.	Course	Q.H.	No.	Course	Q.H.
62.250	Anat.-Physiology I*	4	62.253	Kinesiology I*	4
50.121	Human Devel. I.	4	50.131	Human Devel. II	4
62.218	Elem. School Act.	4	62.220	Motor Devel.*	4
	Elective	4		Elective	4
62.10B	Swimming & Elect.	2	62.14C	Tennis & Elective	2

Third Year

Quarter 6			Quarter 7		
No.	Course	Q.H.	No.	Course	Q.H.
62.263	Kinesiology II	4	62.251	Anat.-Physiology II*	4
50.142	Ed. Stat.	4	62.222	Motor Learning*	4
19.149,	Psych. Elect.	4	62.260	Meas. and Eval.	4
156	or				
157					
62.275	Critical Teaching	3	62.217	Theory of Play or	
	TAC	2	62.212	Theory of Coaching	2
62.14A	Badminton & Elect.	2		TAC	2
			62.16C	Condition. & Elect.	2

Fourth Year**Quarter 8**

No.	Course	Q.H.
62.254	Exer. Physiology I*	4
62.255	Adapted PE I	4
	Elective	4
	TAC	2
	TAC	2

Quarter 9

No.	Course	Q.H.
62.280	Curriculum Devel.	3
62.256	Athletic Training	3
	Elective	4
	Elective	4
	Elective	2

Fifth Year**Quarter 10**

No.	Course	Q.H.
62.282	Student Teaching	12

Quarter 11

No.	Course	Q.H.
62.270	Administration	4
	Elective	4
	Elective	4
	Elective	4

180 Q.H. = Minimum graduation requirement for Physical Education

185 Q.H. = Minimum graduation requirement for Athletic Training

Minimum of 20 Q.H. General Studies Electives

Minimum of 10 Q.H. BBC Electives

For an area of concentration or option within the Physical Education Dept. other courses will be required as replacements for some courses listed above. Those Physical Education courses required of everyone are (*) regardless of concentration.

Specimen Program in Health Education**First Year****Quarter 1**

No.	Course	Cl.	L.	Q.H.
12.101	Gen. Chem.	2	3	3
30.113	Fresh. Writ.	4	4	
50.114	Ed. & Soc. Sc.	4	4	
65.129	Hlth. Educ.	3	3	
65.208	First Aid	2	1	2
	P. E. Elect.		1	

Quarter 2

No.	Course	Cl.	L.	Q.H.
12.102	Gen. Chem.	2	3	3
18.141	Bas. Ani. Bio. I	3	3	4
	Ed. Soc. Elec.			4
65.110	Fnd. Hlth. Ed.	2	2	
65.160	Instrct. Res.	2	2	
65.209	Intro. Safety.	2	2	

Quarter 3

No.	Course	Cl.	L.	Q.H.
10.104	Fund. Math	4		4
18.142	Bas. Ani. Bio.	3	4	4
30.114	Intro. Lit.	4	4	
65.234	Hlth. Prob.	4	4	
	P. E. Elec.			2

Second Year**Quarter 4**

No.	Course	Cl.	L.	Q.H.
19.105	Psychology I	4		4
20.100	Human Devel. I	4		4
62.250	Anat. & Phys.	3	2	4
	G.S. Elect.	4		4

Quarter 5

No.	Course	Cl.	L.	Q.H.
19.106	Psychology II	4		4
50.131	Human Dvl. II	4		4
62.251	Anat. & Phys.	3	2	4
65.116	Nutrition	4		4

Third Year**Quarter 6**

No.	Course	Cl.	L.	Q.H.
18.120	Microbiology	3	4	4
20.100	Soc. Anthrop.	4		4
65.114	Mental Health	4		4
	Req. Elective	4		4

Quarter 7

No.	Course	Cl.	Q.H.
50.141	Meas. & Eval.	4	4
65.222	Drug. Use/Abuse	4	4
65.225	Comm./Deg. Diseases	4	4
	G.S. Elective	4	4

Fourth Year

Quarter 8

No.	Course	Cl.	Q.H.
56.120	Intro. Spec. Ed.	4	4
65.217	Teach. Procedures	4	4
65.223	Hum. Sexuality	4	4
	G.S. Elective	4	4

Quarter 9

No.	Course	Cl.	Q.H.
65.140	Longv. & Aging	4	4
65.219	Community Hlth.	4	4
65.238	Seminar	2	2
	G.S. Elective	8	8
	Found. Ed. Elect.	4	4

Fifth Year

Quarter 10

No.	Course	Q.H.
65.240	Student Teaching or	12
65.241	Field Experience	12
65.240	Prac. in School H.E.	12

Quarter 11

No.	Course	Cl.	Q.H.
65.233	Org./Adm. Hlth. Ed.	4	4
65.235	Health Counseling	4	4
65.239	Seminar	2	2
	Found. Ed. Elect.	4	4

Specimen Program in Physical Therapy

First Year

Quarter 1

No.	Course	Cl.	Q.H.
19.105	Found. of Psych. I	4	4
10.104	Fund. Math.	4	4
18.141	Bas. An. Biol.	3(4)	4
65.129	Health Educ.	3	3
62.206	First Aid	2	2 or

Quarter 2

No.	Course	Cl.	Q.H.
10.105	Fund. Math.	4	4
12.106	Gen. Chem.	4(3)	5
30.113	Fresh. Writ.	4	4
64.114	Intro. to P.T. I	1(2)	2
62.206	First Aid	2	2

Quarter 3

No.	Course	Cl.	Q.H.
12.107	Gen. Chem.	4(3)	5
18.142	Bas. An. Biol.	3(4)	4
30.114	Intro. Lit.	4	4

Second Year

Quarter 4

No.	Course	Cl.	Q.H.
11.171	Basic Physics	4	4
11.173	Physics Lab I	(3)	1
18.143	Human Phys. I	3(3)	4
62.221	Perc. Motor Learn.	3	3
	Elective	4	4
64.114	Intro. to P.T. I	1(2)	2

Quarter 5

No.	Course	Cl.	Q.H.
64.115	Intro. to P.T. II	1(2)	2
11.172	Basic Physics II	4	4
18.144	Human Phys. II	3(3)	4
18.148	Human Anatomy	3(3)	4
19.106	Found. of Psych. II	4	4

Third Year

Quarter 6

No.	Course	Cl.	Q.H.
64.123	Clin. Gross Anat.	4(5)	6
64.125	Physiol. for P.T.	2(2)	3
64.141	Phys. Ther. I	1(2)	2
64.210	Pathology (Wtr.)	3	3
64.227	Clin. Medicine I	2	2
64.234	Clin. Psychiatry	2	2

Quarter 7

No.	Course	Cl.	Q.H.
64.130	Clin. Kinesiology	2(4)	4
64.142	Physical Ther. II	1(4)	3
64.143	Physical Ther. III	3(2)	4
64.229	Clin. Medicine II	3	3

Fourth Year

Quarter 8

No.	Course	Cl.	Q.H.
64.156	Phys. Ther. IV	2(2)	3
64.147	Phys. Ther. V	1(5)	3
64.210	If not in Quart. 6		
64.227	If not in Quart. 6		
64.251	Neuroanatomy	3(2.5)	4
64.149	Clin. Seminar	2	2

Quarter 9

No.	Course	Cl.	Q.H.
64.169	Phys. Ther. VII	1(2)	2
64.184	Super. Clin. Educ.		5
64.230	Clin. Medicine III	3	3
64.171	Phys. Ther. VI	1(2)	2
64.148	Phys. Ther. V cont.	½(1)	1

Fifth Year

Quarter 10				Quarter 10A				Quarter 11			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
64.176	Administration	3	3	64.194	Super. Clin. Ed.			64.173	Phys. Ther. in Health Care Syst.	3	3
64.167	Research Design	3(2)	4					64.182	Psychosoc. Aspects of Illness	3	3
64.178	Phys. Ther. VIII	1(2)	2					64.239	Invest. Studies Elective	4(4)	6
	Elective	4	4							4	4
	Elective	4	4								

Specimen Program in Recreation and Leisure Studies**First Year**

Quarter 1				Quarter 2			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
30.113	Fresh. Writ.	4	4	30.114	Intro. Lit.	4	4
29.106	Pub. Spkg.	3	3	18.141	Biology	4(3)	4
50.114	Ed. & Soc. Sci.	4	4		Soc. Sci. El.	4	4
60.136	Life/Car. Plan.	4	4	63.12C	Bas. Folk	2	1
				63.12D	Dram. Games	2	1
					or		
				63.12E	Draw. & Des.	2	1
Quarter 3				Quarter 3A			
No.	Course	Cl.	Q.H.	No.	Course	Q.H.	
65.129	Health	3	3	63.124	Camp	2	
18.142	Biology	4(3)	4				
	Soc. Sci. El.	4	4				
63.12A	Soc. Rec.	2	1				
63.12V	Int. Camp	2	1				

Second Year

Quarter 4					Quarter 5				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
50.121	Human Dev. I	4		4	50.131	Human. Dev. II	4		4
62.250	Anat. & Phy. I	3	2	4	62.251	Anat. & Phy II	3	2	4
	Ear. Sci. Elec.	4		4		Ear. Sci. Elec.	4		4
63.255	Intro. Ther. Rec.	3		3	63.12P	Sports Lead.	2		2
	or					or			
63.148	Intro. to Out. Ed.	3		3	63.12Q	Sur. of Aqua. Skills	2		2
	or						2		2
63.263	Intro. to Comm. Rec.	3		3					
	Skills	3		3					

Third Year

Quarter 6				Quarter 7			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
29.163	Workshop Drama	4	4	63.128	Survey of Fac.	3	3
	Skills	3	3		Rec. Elec.	3	3
	Rec. Elec.	3	3		Rec. Elec.	3	3
	Rec. Elec.	3	3		Elec.	3	3
	Elec.	3	3		Elec.	3	3

Fourth Year

Quarter 8				Quarter 9			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
63.250	Group Dynamics	3	3	63.280	Sup. Field Exp.		16
	Elec.	3	3		Also Senior Year for transfer students.		
	Elec.	3	3				
	Elec.	3	3				
	Elec.	3	3				

Fifth Year

Quarter 10

Quarter 11

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
63.285	Research	4	4	63.290	Senior Sem.	4	4
	Elec.	4	4		Elec.	4	4
	Elec.	4	4		Elec.	4	4
	Elec.	4	4		Elec.	4	4

Quarters
Offered

Department Electives

6	63.126 Outdoor Education I
7-8-11	63.127 Outdoor Education II
7-11	63.129 School Camping (spring)
8-10	63.145 Winter Sports (winter)
10	63.146 Camp Administration
7	63.147 Outdoor Education for Handicapped (summer only)
6-8	63.149 Elements of Outdoor Planning
7-11	63.152 Analysis of Movement as Applied to Recreation (spring)
6-8-10	63.153 Psychological Aspects of Disabilities
7-11	63.210 Philosophy of Recreation and Leisure (spring)
6-8-10	63.216 Seminar on Outdoor Issues and Legislation
6-8-10	63.220 Methods and Materials in Recreation
8-10	63.249 Process of Aging
8-10	63.256 Activities for Special Populations
7-11	63.257 Adaptive Workshop (spring only)
6-8-10	63.260 Administration of Parks and Recreation
6-8-10	63.262 Budget and Finance
	63.264 Program Evaluation
7-11	63.266 Community Schools
	63.268 Urban Recreation

College of Business Administration

Specimen Program for First Three Quarters

The first three quarters are the same for all concentrations.

Quarter 1

Quarter 2

Quarter 3

No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
41.111	Acct. Prin. I	4	41.112	Acct. Prin. II	4	49.100	Intro. to Bus.	4
10.119	Fund. of Math	4	49.249	Intro. Quan.	4	30.114	Intro. Lit.	4
				Meth. in Bus.	4	39.106	Prin. of Econ.	4
30.113	Fresh. Writ.	4	39.105	Prin. of Econ.	4		Liberal Elec.	
	Liberal Elec.	4		Liberal Elec.	4			

Accounting

Quarter 4	49.250, Quantitative Methods I; 49.205, Introduction to Data Processing, two liberal electives.
Quarter 5	49.251, Quantitative Methods II; three liberal electives.
Quarter 6	41.251, Intermediate Accounting I; 45.209, Organization Behavior I; 43.120, Introduction to Marketing; one liberal elective.
Quarter 7	41.252, Intermediate Accounting II; 41.253, Cost Accounting I; 45.210, Organization Behavior II; 44.120, Introduction to Finance.
Quarter 8	41.254, Cost Accounting II; 41.255, Intermediate Accounting III; liberal elective; open elective (non-accounting).
Quarter 9	45.250, Business and Society; 41.262, Accounting Theory and Practice or 41.263, Accounting Planning and Control; Business elective (non-accounting); open elective.
Quarter 10	45.112, Business Policy; liberal elective; open elective.
Quarter 11	Two open electives; two open electives (non-accounting).

Entrepreneurship And New Venture Management

Quarter 4	49.250, Quantitative Methods I; 49.205, Introduction to Data Processing; two liberal electives.
Quarter 5	49.251, Quantitative Methods II; three liberal electives.
Quarter 6	45.209, Organization Behavior I; 45.212, New Venture Creation; 43.120, Introduction to Marketing; open elective.
Quarter 7	45.210, Organization Behavior II; 44.120, Introduction to Finance; two open electives.
Quarter 8	45.130, Operations Analysis and Venture Capital; liberal elective; open elective; Business elective.
Quarter 9	44.159, Small Business Finance; 45.250, Business and Society; liberal elective; open elective.
Quarter 10	45.112, Business Policy; 49.107, Small Business Management; liberal elective; open elective. 49.107 and open elective are switched in quarters 10 and 11.
Quarter 11	45.295, Small Business Institute Field Project; two open electives.

Finance and Insurance

Quarter 4	49.250, Quantitative Methods I; 49.205, Introduction to Data Processing; two liberal electives.
Quarter 5	49.251, Quantitative Methods II; three liberal electives.
Quarter 6	44.120, Introduction to Finance; 44.275, Money and Business Activity; 45.209, Organization Behavior I; liberal elective.
Quarter 7	44.154, Managerial Finance; 43.120, Introduction to Marketing; 45.210, Organization Behavior II; liberal elective.
Quarter 8	44.181, Investment Management; Finance elective; Business elective; open elective.
Quarter 9	45.250, Business and Society; Finance elective; liberal elective; open elective.
Quarter 10	45.112, Business Policy; Finance elective; two open electives.
Quarter 11	All open electives.

General Business Administration

- Quarter 4** 49.250, Quantitative Methods I; 49.205, Introduction to Data Processing; two liberal electives.
- Quarter 5** 49.251, Quantitative Methods II; three liberal electives.
- Quarter 6** 45.209, Organization Behavior I; 44.120, Introduction to Finance; Business elective; open elective.
- Quarter 7** 45.210, Organization Behavior II; 43.120, Introduction to Marketing; Business elective; open elective.
- Quarter 8** Liberal elective; two Business electives; open elective.
- Quarter 9** 45.250, Business and Society; liberal elective; Business elective; open elective.
- Quarter 10** 45.112, Business Policy; liberal elective; Business elective; open elective.
- Quarter 11** Business elective; three open electives.

Human Resources Management

- Quarter 4** 49.250, Quantitative Methods I; 49.205, Introduction to Data Processing; two liberal electives.
- Quarter 5** 49.251, Quantitative Methods II; three liberal electives.
- Quarter 6** 45.209, Organization Behavior I; 43.120, Introduction to Marketing; two open electives.
- Quarter 7** 45.210, Organization Behavior II; 45.272, People and Productivity; 44.120, Introduction to Finance; open elective.
- Quarter 8** 45.274, Contemporary Labor Issues; Human Resources Management elective; liberal elective; open elective.
- Quarter 9** 45.250, Business and Society; open elective; liberal elective; Human Resources Management elective.
- Quarter 10** 45.273, Personnel Administration; 45.277, Reward Systems; 45.112, Business Policy; liberal elective.
- Quarter 11** Business elective; three open electives.

International Business Administration

- Quarter 4** 49.250, Quantitative Methods I; 49.205, Introduction to Data Processing; two liberal electives.
- Quarter 5** 49.251, Quantitative Methods II; three liberal electives.
- Quarter 6** 45.209, Organization Behavior I; 46.100, Introduction to International Business; 44.120, Introduction to Finance; open elective.
- Quarter 7** 45.210, Organization Behavior II; 43.120, Introduction to Marketing; Business elective; open elective.
- Quarter 8** Liberal International elective; Business elective; liberal elective; open elective.
- Quarter 9** 45.250, Business and Society; Business elective; Business International elective; open elective.
- Quarter 10** 45.112, Business Policy; Liberal International elective; two open electives.
- Quarter 11** 46.101, Seminar in International Business; Business International elective; two open electives.

Management

Quarter 4	49.250, Quantitative Methods I; 49.205, Introduction to Data Processing; two liberal electives.
Quarter 5	49.251, Quantitative Methods II; three liberal electives.
Quarter 6	45.209, Organization Behavior I; 44.120, Introduction to Finance; open elective; Business elective.
Quarter 7	45.210, Organization Behavior II; 45.272, People and Productivity: Human Resources Management; 41.205, Cost Accounting for Management; 43.120, Introduction to Marketing.
Quarter 8	49.155, Legal Aspects of Business; Business elective; liberal elective; open elective.
Quarter 9	45.250, Business and Society; 45.265, Production Management; liberal elective; open elective.
Quarter 10	45.112, Business Policy; liberal elective; two open electives.
Quarter 11	Three open electives; Business elective.

Marketing

Quarter 4	49.250, Quantitative Methods I; 49.205, Introduction to Data Processing; two liberal electives.
Quarter 5	49.251, Quantitative Methods II; three liberal electives.
Quarter 6	43.120, Introduction to Marketing; 45.209, Organization Behavior I; liberal elective; open elective.
Quarter 7	43.252, Marketing Management; 45.210, Organization Behavior II; 44.120, Introduction to Finance; open elective.
Quarter 8	43.240, Marketing Research; Marketing elective; Business elective; open elective.
Quarter 9	45.250, Business and Society; Marketing elective; liberal elective; open elective.
Quarter 10	43.278, Competitive Strategy; 45.112, Business Policy; liberal elective; open elective.
Quarter 11	Marketing elective; three open electives.

Transportation and Physical Distribution Management

Quarter 4	49.250, Quantitative Methods I; 49.205, Introduction to Data Processing; two liberal electives.
Quarter 5	49.251, Quantitative Methods II; three liberal electives.
Quarter 6	48.101, Principles of Transportation; 45.209, Organization Behavior I; 44.120, Introduction to Finance; open elective.
Quarter 7	45.210, Organization Behavior II; 43.120, Introduction to Marketing; 48.104, Physical Distribution Management; open elective.
Quarter 8	Transportation elective; Business elective; liberal elective; open elective.
Quarter 9	45.250, Business and Society; 48.102, Current Issues in Transportation Policy; liberal elective; open elective.
Quarter 10	45.112, Business Policy; Transportation elective; liberal elective; open elective.
Quarter 11	48.120, Seminar in Transportation; three open electives.

College of Criminal Justice

Specimen Program in Criminal Justice

First Year

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
92.104			92.210			92.211		
39.115			39.116			21.100		
22.110			22.111			19.106		
19.105			30.113			30.114		

Second Year

Quarter 4			Quarter 5		
No.	Course	Q.H.	No.	Course	Q.H.
22.141	Math/Sci. Require.			Math/Sci. Require.	
92.141				Non-C.J. Elect.	
92.137				C.J. Elect.	
			92.134		

Third Year

Quarter 6			Quarter 7		
No.	Course	Q.H.	No.	Course	Q.H.
19.120			92.157		
	C.J. Elective			C.J. Elective	
	Non-C.J. Elective			Non-C.J. Elective	
	Non-C.J. Elective			Non-C.J. Elective	

Fourth Year

Fifth Year

Quarters 8-11					
No.	Course	Q.H.	No.	Course	Q.H.
	C.J. Electives	24		Non-C.J. Electives	36

College of Education

To earn a Bachelor of Science degree in Education, all students must complete:

1. Distribution requirements with a minimum of 16 quarter hours in each one of these areas: humanities, mathematics/sciences, social sciences.

2. Major course requirements as listed on pages 29-35. (In addition to those courses required of all Elementary Education majors, students in this major must take designated courses in one area of emphasis chosen from the following: humanities, early childhood education, social sciences, mathematics/sciences, language/reading, special education.)

3. Designated electives which are offered by the College of Arts and Sciences the College of Education. These electives are in the areas of English, history, drama/speech, political science, economics, earth science, and the foundations of education, depending upon the particular program of study.

There is no language requirement.

As early as possible students should discuss their curriculum questions and academic needs with a representative of the Dean's office or a faculty adviser.

Elementary Education

Quarter 1	30.113, Freshman Writing; 50.114, Education and Social Science; designated electives.
Quarter 2	23.101, Western Civilization; designated electives.
Quarter 3	23.102, Western Civilization; 30.114, Introduction to Literature; designated electives.
Quarter 4	56.120, Introduction to Special Education; 50.121, Human Development and Learning I; 39.115, Principles and Problems of Economics; designated electives.
Quarter 5	Designated electives.
Quarter 6	51.131, Fundamentals of Arithmetic I; 51.133, Fundamentals of Reading I; 51.135, Analysis of Teaching and Educational Process; designated elective.
Quarter 7	51.132, Fundamentals of Arithmetic II; 51.134, Fundamentals of Reading II; designated electives.
Quarter 8	51.141, Elementary Education Compendium I; 90.253, Professional Development for Teachers; designated electives.
Quarter 9	50.141, Measurement and Evaluation; 51.142, Elementary Education Compendium II; designated electives.
Quarter 10	Designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

Teaching of Biology

Quarter 1	12.106, General Chemistry; 18.131, General Biology; 50.114, Education and Social Science; designated electives.
Quarter 2	18.132, Animal Biology; 30.113, Freshman Writing; designated electives.
Quarter 3	12.107, General Chemistry; 30.114 Introduction to Literature; designated electives.
Quarter 4	50.131, Human Development and Learning II; 12.144, Organic Chemistry; 18.133, Plant Biology; designated elective.
Quarter 5	18.134, Environmental and Population Biology; designated electives.
Quarter 6	11.171, Physics for Life Sciences I; 18.135, Genetics and Development Biology; 51.135, Analysis of Teaching and Educational Process; designated elective.

Quarter 7	11.172, Physics for Life Sciences II; 18.136, Cell Physiology and Biochemistry; designated electives.
Quarter 8	51.147, Methods and Materials of Teaching the Sciences; 90.253, Professional Development for Teachers; designated electives.
Quarter 9	50.141, Measurement and Evaluation; designated electives.
Quarter 10	Designated electives.
Quarter 10A	51.151, Student Teaching and Seminar
Quarter 11	Designated electives.

Teaching of Chemistry

Quarter 1	10.150, Calculus; 12.103, General Chemistry; 50.114, Education and Social Science; 18.131, General Biology.
Quarter 2	10.151, Calculus; 12.104, General Chemistry; 18.132, Animal Biology; 30.113, Freshman Writing.
Quarter 3	10.152, Calculus; 12.110, The Chemical Elements; 30.114, Introduction to Literature; designated electives.
Quarter 4	11.117, Physics for Science Majors; 11.147, Physics Laboratory; 12.153, Organic Chemistry; 50.131, Human Development and Learning II; designated elective.
Quarter 5	11.119, Physics for Science Majors; 11.148, Physics Laboratory; 12.154, Organic Chemistry; designated electives.
Quarter 6	12.161, Physical Chemistry; 51.135, Analysis of Teaching and Educational Process; designated electives.
Quarter 8	12.168, Physical Chemistry; 12.171, Analytical Chemistry; 51.147, Methods and Materials of Teaching the Sciences; 90.253, Professional Development for Teachers; designated elective.
Quarter 9	12.213, Inorganic Chemistry; 50.141, Measurement and Evaluation; designated electives.
Quarter 10	12.179, Instrumental Analysis; designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

Teaching of Earth Science

Quarter 1	12.106, General Chemistry; 18.131, General Biology; 50.114, Education and Social Science; designated electives.
Quarter 2	18.132, Animal Biology; 30.113, Freshman Writing; designated electives.
Quarter 3	12.107, General Chemistry; 30.114, Introduction to Literature; designated electives.
Quarter 4	11.171, Physics for Life Sciences I; 16.201, Physical Geology; 16.203, Physical Geology Laboratory; 50.131, Human Development and Learning II; designated elective.
Quarter 5	11.172, Physics for Life Sciences II; 16.202, Historical Geology; 16.204, Historical Geology Laboratory; designated electives.
Quarter 6	51.135, Analysis of Teaching and Educational Process; designated electives.
Quarter 7	Designated electives.
Quarter 8	51.147, Methods and Materials of Teaching the Sciences; 90.253, Professional Development for Teachers; designated electives.
Quarter 9	50.141, Measurement and Evaluation; designated electives.

Quarter 10	Designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

Teaching of English

Quarter 1	30.113, Freshman Writing; 50.114, Education and Social Science; designated electives.
Quarter 2	23.101, Western Civilization; designated electives.
Quarter 3	23.102, Western Civilization; 30.114, Introduction to Literature; designated electives.
Quarter 4	30.110, Literary Analysis; Poetry; 50.131, Human Development and Learning II; designated electives.
Quarter 5	One course in major American Novels or Drama Literature; designated electives.
Quarter 6	26.150, Introduction to Logic; 30.120, Introduction to Linguistics or 30.130, Introduction to Semantics; 51.135, Analysis of Teaching and Educational Process; designated electives.
Quarter 7	Designated electives.
Quarter 8	30.250, Shakespeare; 50.141, Measurement and Evaluation; 51.143, Methods and Materials of Teaching English; 90.253, Professional Development for Teachers; designated elective.
Quarter 9	30.251, Shakespeare; 51.139, Writing and the Teaching of Writing; 51.126, Teaching of Reading in Secondary Schools; 50.141, Measurement and Evaluation.
Quarter 10	Designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

Teaching of General Science

Quarter 1	12.106, General Chemistry; 18.131, General Biology; 50.114, Education and Social Science; designated electives.
Quarter 2	18.132, Animal Biology; 30.113, Freshman Writing; designated electives.
Quarter 3	12.107, General Chemistry; 30.114, Introduction to Literature; designated electives.
Quarter 4	11.171, Physics for Life Sciences I; 12.144, Organic Chemistry; 50.131, Human Development and Learning II; designated elective.
Quarter 5	11.172, Physics for Life Sciences II; designated electives.
Quarter 6	16.201, Physical Geology; 16.203, Physical Geology Laboratory; 51.135, Analysis of Teaching and Educational Process; designated electives.
Quarter 7	16.161, Observational Astronomy; designated electives.
Quarter 8	51.147, Methods and Materials of Teaching the Sciences; 90.253, Professional Development for Teachers; designated electives.
Quarter 9	50.141, Measurement and Evaluation; designated electives.
Quarter 10	Designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

Teaching of Mathematics

Quarter 1	10.181, Calculus I; 11.117, Physics for Science Majors I; 30.113, Freshman Writing; 50.114, Education and Social Science.
Quarter 2	10.182, Calculus II; 11.118, Physics for Science Majors II; 23.102, Western Civilization; designated elective.
Quarter 3	10.183, Calculus III; 11.119, Physics for Science Majors III; 30.114, Introduction to Literature; designated elective.
Quarter 4	10.184, Calculus and Linear Methods I; 93.110, Programming Computers with FORTRAN; 26.151, Symbolic Logic; 50.131, Human Development and Learning II.
Quarter 5	10.185, Calculus and Linear Methods II or 10.154, Calculus; designated electives.
Quarter 6	51.135, Analysis of Teaching and Educational Process; designated electives.
Quarter 7	Designated electives.
Quarter 8	51.145, Methods and Materials of Teaching Mathematics; 90.253, Professional Development for Teachers; designated electives.
Quarter 9	51.124, Modern Mathematics Curricula; 50.141, Measurement and Evaluation; designated electives.
Quarter 10	Designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

Teaching of Modern Languages

Quarter 1	30.113, Freshman Writing; 50.114, Education and Social Science; designated electives.
Quarter 2	23.101, Western Civilization; designated electives.
Quarter 3	23.102, Western Civilization; 30.114, Introduction to Literature; designated electives.
Quarter 4	30.170, Survey of English Literature I; 50.131, Human Development and Learning II; designated electives.
Quarter 5	Designated electives.
Quarter 6	51.135, Analysis of Teaching and Educational Process; designated electives.
Quarter 7	Designated electives.
Quarter 8	51.140, Methods and Materials of Teaching Modern Languages I; 90.253, Professional Development for Teachers; designated electives.
Quarter 9	51.144, Methods and Materials of Teaching Modern Languages II; 50.141, Measurement and Evaluation; designated electives.
Quarter 10	Designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

Teaching of Music

Quarter 1	28.133, Music Fundamentals; 30.113, Freshman Writing, 50.114, Education and Social Science; designated elective.
Quarter 2	28.106, Music Theory I; 30.114, Introduction to Literature; 28.240, Keyboard I; designated elective.
Quarter 3	28.107, Music Theory II; 28.241, Keyboard II; designated electives.

Quarter 4	28.270, Strings I; 28.132, Music Theory III; 50.121, Human Development I; designated elective.
Quarter 5	28.271, Strings II; *28. , Music History/Literature elective; 11.109, Physics in Music; 50.131, Human Development II.
Quarter 6	28.272, Woodwinds I; 28.278, Organization of Instrumental Programs; 51.135, Analysis of Teaching; designated elective.
Quarter 7	28.273, Woodwinds II; 28.277, Voice; 51.127, Teaching Music in Elementary Schools; designated elective.
Quarter 8	28.274, Brass I; 51.128, Teaching Music in Secondary Schools I; 90.253, Professional Development; two designated electives.
Quarter 9	28.275, Brass II; 51.129, Teaching Music in Secondary Schools II; 50.141, Measurement and Evaluation; designated elective.
Quarter 10	28.276, Percussion; designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

Teaching of Physics

Quarter 1	10.181, Calculus I; 11.117, Physics for Science Majors I; 30.113, Freshman Writing; 50.114, Education and Social Science.
Quarter 2	10.182, Calculus II; 11.118, Physics for Science Majors II; 23.102, Western Civilization; designated elective.
Quarter 3	10.183, Calculus III; 11.119, Physics for Science Majors III; 30.114, Introduction to Literature; designated elective.
Quarter 4	10.184, Calculus and Linear Methods I; 11.127, Intermediate Mechanics; 11.147, Physics Laboratory; 50.131, Human Development and Learning II; designated elective.
Quarter 5	10.185, Calculus and Linear Methods II; 11.128, Electric and Magnetic Fields; 11.148, Physics Laboratory; designated electives.
Quarter 6	10.250, Analysis II or 10.221, Applied Analysis; 11.200, Classical Mechanics; 11.260, Wave Laboratory; 51.135, Analysis of Teaching and Educational Process.
Quarter 7	10.251, Analysis II or 10.221, Applied Analysis; designated electives.
Quarter 8	12.106, General Chemistry or 12.114, General Chemistry; 51.147, Methods and Materials of Teaching the Sciences; 90.253, Professional Development for Teachers; designated elective.
Quarter 9	12.115, General Chemistry; 50.141, Measurement and Evaluation; designated electives.
Quarter 10	Designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

*Course number to be assigned.

Teaching of Social Studies

Quarter 1	30.113, Freshman Writing; 50.114, Education and Social Science; designated electives.
Quarter 2	23.101, Western Civilization; designated electives.
Quarter 3	23.102, Western Civilization; 30.114, Introduction to Literature; designated electives.

Quarter 4	23.210, U.S. to 1877; 26.150, Introduction to Logic; 39.115, Principles and Problems of Economics; 50.131, Human Development and Learning II.
Quarter 5	23.211, U.S. Since 1877; 39.116, Principles and Problems of Economics; designated electives.
Quarter 6	23.199, The Historian's Craft; 51.135, Analysis of Teaching and Educational Process; designated electives.
Quarter 7	39.280, Comparative Economics; designated electives.
Quarter 8	51.149, Methods and Materials of Teaching Social Studies; 90.253, Professional Development for Teachers; designated elective.
Quarter 9	51.126, Teaching Reading in Secondary Schools; 50.141, Measurement and Evaluation; designated electives.
Quarter 10	Designated electives.
Quarter 10A	51.151, Student Teaching and Seminar.
Quarter 11	Designated electives.

Speech and Hearing

Quarter 1	30.113, Freshman Writing; 50.114, Education and Social Science; designated electives.
Quarter 2	55.159, Basic Manual Communication; designated electives.
Quarter 3	30.114, Introduction to Literature; 55.122, Introduction to Speech and Hearing; 18.116, The Human Organism; designated elective.
Quarter 4	50.142, Introduction to Educational Statistics; 56.120, Introduction to Special Education; 55.126, Anatomy of Vocal Mechanisms; designated elective.
Quarter 5	50.121, Human Development and Learning I; 55.125, Hearing Science; designated electives.
Quarter 6	19.135, Personality I; 55.131, Developmental Semantics and Syntax; 55.123, Speech Science; designated electives.
Quarter 7	19.136, Personality II; 55.141, Phonemic Disorders; 55.133, Phonetics and Developmental Phonology; designated electives.
Quarter 8	51.133, Fundamentals of Reading I; 55.154, Fluency Disorders; 90.253, Professional Development; 55.142, Introduction to Audiology; designated elective.
Quarter 9	55.143, Diagnostic Techniques; 55.141, Orientation to Clinical Practices; designated electives.
Quarter 10	19.202, Abnormal Psychology I, designated electives.
Quarter 11	19.203, Abnormal Psychology II; designated elective.

Human Services

Quarter 1	22.111, Introduction to American Government; 30.113, Freshman Writing; 50.114, Education and Social Science; designated electives.
Quarter 2	30.114, Introduction to Literature; 50.166, The Human Services Professions; 50.161, Seminar in Group Process; designated elective.
Quarter 3	39.116, Principles and Problems of Economics; designated electives.
Bachelor of Science	Prerequisite courses: 30.113, Freshman Writing; 30.114, Introduction to Literature; 50.121, Human Development I; 50.131, Human Development and Learning II; 50.114, Education and Social Science; 22.111, Introduction to American Government; 39.116, Principles and Problems of Economics; 50.166, Introduction to Human Service Professions; 50.142, Introduction to Educational Statistics.

Core Courses: Either 19.135, Personality I and 19.136, Personality II and 19.202, Abnormal Psychology or 19.135, Personality I and 19.202, Abnormal Psychology I and 19.203, Abnormal Psychology II; 50.167, Psychosocial Development; 50.161, Seminar in Group Process; 50.133, Educational Applications of Social Psychology; 21.157, Sociology of Human Service Organizations; 56.150, Introduction to Rehabilitation; 56.951, Principles of Medical Rehabilitation; one of these; 21.145, Urban Society or 21.245, Community Analysis or 56.956, Community Planning in Rehabilitation; one of these: 56.958, Social Welfare and Rehabilitation or 21.125, Sociology of Private and Public Assistance or 21.221, Seminar in Social Welfare; 53.804, Counseling Theory and Process.

Approved four-course concentration; two supervised field placements.

Courses in the areas of drama/speech and education humanities.

Distribution requirements.

College of Engineering

Specimen Program in Chemical Engineering

All courses in Chemical Engineering must be taken in sequence shown.

First Year

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
10.150	Calculus I	4	10.151	Calculus II	4	10.152	Calculus III	4
11.203	Physics I	4	11.204	Physics II	4	11.205	Physics III	4
*09.108	Comp. for Eng.	4	*09.109	Eng. Graph./Des.	4	12.115	Gen. Chem. III	4
30.114	Intro. Lit.	4	12.114	Gen. Chem. I	4	30.115	Gr. Th. Lit.	4

First year pattern of two-term courses may vary according to assigned section.

(Quarters 4,6,8, and 10 offered Fall & Winter)

(Quarters 5,7, and 9 offered Spring & Summer)

Second Year

Quarter 4			Quarter 5		
No.	Course	Q.H.	No.	Course	Q.H.
10.153	Calculus IV	4	10.154	Calculus V	4
11.206	Physics IV	4	04.102	Chem. Eng. Cal. II	4
04.101	Chem. Eng. Cal. I	4	04.106	Poly. Sci. Eng.	4
12.147	Organic Chem. I	4	12.148	Organic Chem. II	4
11.110	Physics Lab I	1	11.111	Physics Lab II	1

Third Year

Quarter 6			Quarter 7		
No.	Course	Q.H.	No.	Course	Q.H.
10.155	Math. Analysis I	4	10.156	Math. Analysis II	4
04.111	Chem. Eng. I	4	04.112	Chem. Eng. II	4
12.161	Phys. Chem. I	4	12.162	Phys. Chem. II	4
39.115	Economics I	4	39.116	Economics II	4

Fourth Year**Quarter 8**

No.	Course	Q.H.
04.121	Trans. Phen. I	4
04.123	Exp. Methods I	4
04.126	Chem. Eng. Ther.	4
	Soc. Sci./	4
	Hum. Elect.	

Quarter 9

No.	Course	Q.H.
04.122	Trans. Phen. II	4
04.124	Exp. Methods II	4
04.136	Chem. Eng. Kinet.	4
	Soc.Sci./	4
	Hum.Elect.	

Fifth Year**Quarter 10**

No.	Course	Q.H.
*04.131	Proc. Design I	6
*04.133	Projects I	6
	Chem. Eng. Elect.	4
	Chem. Eng. Elect.	4
	Soc. Sci./	
	Hum.Elect.	4

Quarter 11

No.	Course	Q.H.
*04.132	Proc. Design II	6
*04.134	Projects II	6
	Chem. Eng. Elect.	4
	Chem. Eng. Elect.	4
	Soc. Sci./	
	Hum. Elect.	4

*Note: Classes before 1982 took 09.106 and 09.107.

Quarters 10 and 11 must be approved by departmental adviser.

Specimen Program in Civil Engineering**First Year****Quarter 1**

No.	Course	Cl.	Q.H.
09.108	Comp. for Eng.	3	4
10.150	Calculus I	3	4
11.203	Physics I	3	4
30.114	Intro. Lit.	3	4

Quarter 2

No.	Course	Cl.	Q.H.
09.109	Eng. Graph./Des.	3	4
10.151	Calculus II	3	4
11.204	Physics II	3	4
12.114	Gen. Chem. I	3	4

Quarter 3

No.	Course	Cl.	Q.H.
10.152	Calculus III	3	4
11.205	Physics III	3	4
12.115	Gen. Chem. III	3	4
30.115	Gr. Th. Lit.	3	4

Second Year**Quarter 4**

No.	Course	Cl.	Q.H.
11.110	Physics Lab I	0(3)	1
10.153	Calculus IV	3	4
11.206	Physics IV	3	4
39.115	Economics I	3	4
01.116	Eng. Meas.	3	4
01.117	Eng. Meas.	0(3)	2

Quarter 5

No.	Course	Cl.	Q.H.
02.130	Thermo. I	3	4
11.111	Physics Lab II	0(3)	1
10.154	Calculus V	3	4
39.116	Economics II	3	4
01.140	Struct. Mech. I	3	4
01.116	Eng. Meas.	3	4
01.117	Eng. Meas. Lab	0(3)	2

01.116, 117 offered Fall and Summer quarters.

Third Year**Quarter 6**

No.	Course	Cl.	Q.H.
10.155	Math. Anal. I	3	4
02.116	Dynamics	3	4
01.141	Str. Mechs. II	3	4
	Soc. Sci./	3	
	Hum. Elect.		4

Quarter 7

No.	Course	Cl.	Q.H.
10.156	Math	3	4
01.180	Materials	3	4
01.120	Fluid Mechs. I	3	4
29.113	Effect. Speaking	2	2
01.143	Struct. Anal. I	3	4

Fourth Year**Quarter 8**

No.	Course	Cl.	Q.H.
03.183	Elec. Eng. I	3	4
01.178	Soil Mechs.	3	4
01.179	Soil Mechs. Lab	0(3)	2
	Tech. Elect.	3	4
	Soc. Sci./		
	Hum. Elect.		4

Quarter 9

No.	Course	Cl.	Q.H.
01.193	Env. Eng. I	3	4
01.150	Conc. Des. I	3	4
	Tech. Elect.	3	4
	Soc. Sci./		
	Hum. Elect.		4

Fifth Year

Quarter 10

No.	Course	Cl.	Q.H.
01.160	Struct. Design	3	4
	Soc. Sci./		
	Hum. Elect.	3	4
	Tech. Elect.	3	4
	Tech. Elect.	3	4

Quarter 11

No.	Course	Cl.	Q.H.
	General Elect.	3	4
	Tech. Elect.	3	4
	Tech. Elect.	3	4
	Tech. Elect.	3	4

Note: Quarters 8 and 9. One half class takes 01.150, the other 01.178 and 01.179 in Quarter 8. In Quarter 9 the sections are reversed.
 Quarter General Elective—this may be a technical or liberal elective or any other course given at the University. The general elective may be interchanged with an arts and sciences elective in another quarter, with the approval of the Civil Engineering Department.

Technical Electives

Fall-Winter

Quarters 8 & 10

No.	Course	Cl.	Q.H.
01.101	Ind. Study	-	-
01.102	Special Topics	-	-
*01.122	Hydraulic Eng.	3	4
**01.142	Struct. Mech. III	3	4
**01.152	Concr. Des. II	3	4
*01.175	Geotechnics	3	4
*01.194	Environ. Eng. II	3	4
**01.206	App. Probability	3	4
**01.244	Struct. Anal. II	3	4
05.245	Eng. Statistics	3	4
**05.260	Eng. Economy	3	4

Spring

Quarters 9 & 11

No.	Course	Cl.	Q.H.
01.101	Ind. Study	-	-
01.102	Special Topics	-	-
01.105	C. E. Systems	3	4
01.135	Constr. Eng.	3	4
01.136	Highway Eng.	3	4
**01.161	Struct. Des. II	3	4
**01.174	Found. Eng.	3	4
*01.195	Environ. Eng. III	3	4
*01.196	Environ. Design	3	4
01.207	Tech. Assess.	3	4
01.234	Transp. Eng.	3	4
**01.245	Struct. Anal. III	3	4
*01.259	Air Pollution	3	4
05.245	Eng. Statistics	3	4
05.260	Eng. Economy	3	4

*Required for Environmental Option

**Recommended for Structures Option

Note: During the summer the Civil Engineering Department offers a limited number of technical electives. Students should check with the Department for specific information.

Note: Technical electives from other engineering departments may be elected with the approval of the Civil Engineering Department Curriculum Committee.

Specimen Program in Electrical Engineering

First Year

Quarter 1

No.	Course	Cl.	Q.H.
09.108	Comp. for Eng.	4	4
10.150	Calculus	4	4
11.203	Physics	4	4
30.114	Intro. Lit.	4	4

Quarter 2

No.	Course	Cl.	Q.H.
09.109	Eng. Graph./Des.	4	4
10.151	Calculus II	4	4
11.204	Physics II	4	4
12.114	Gen. Chem. I	4	4

Quarter 3

No.	Course	Cl.	Q.H.
10.152	Calculus	4	4
11.205	Physics	4	4
12.115	Gen. Chem.	4	4
30.115	Gr. Th. Lit.	4	4

Second Year

Quarter 4

No.	Course	Cl.	Q.H.
10.153	Calculus III	4	4
11.286	Physics	4	4
03.111	Circs. & Syst. I	4	4
	Soc. Sci./		
	Hum. Elect.	4	4
11.110	Physics Lab	0(3)	1
03.151	E.E. Lab I-A	0(4)	1

Quarter 5

No.	Course	Cl.	Q.H.
10.154	Calculus IV	4	4
02.163	Mechanics	4	4
03.112	Circs. & Syst. II	4	4
	Soc. Sci./		
	Hum. Elect.	4	4
11.111	Physics Lab	0(3)	1
03.152	E.E. Lab I-B	0(4)	1

Third Year**Quarter 6**

No.	Course	Cl.	Q.H.
10.155	Math. Anal. I	4	4
03.113	Circs. & Syst. III	4	4
03.101	Discrete Syst.	4	4
02.130	Thermo. I	4	4
03.153	E.E. Lab II-A	0(4)	1

Quarter 7

No.	Course	Cl.	Q.H.
10.156	Math. Anal. II	4	4
03.122	Circs. & Syst. IV	4	4
03.141	Electronics I	4	4
03.154	E.E. Lab II-B	0(4)	1
	Soc. Sci./		
	Hum. Elect.	4	4

Fourth Year**Quarter 8**

No.	Course	Cl.	Q.H.
03.142	Elect. II	4	4
03.161	Field Theory I	4	4
02.199	Material Science	4	4
	Soc. Sci./	4	4
	Hum. Elect.		
03.155	E.E. Lab III-A		1

Quarter 9

No.	Course	Cl.	Q.H.
03.144	Elect. III	4	4
03.162	Field Theory II	4	4
03.191	Intro. to Dig.	4	4
	Comp. I		
	Soc. Sci./	4	4
	Hum. Elect.		
03.156	E.E. Lab III-B	0(4)	1

Fifth Year**Quarter 10**

No.	Course	Cl.	Q.H.
03.175	Electromech. Dyn.	4	4
	Soc. Sci./	4	4
	Hum. Elect.		
	Tech. Elect.	4	4
	Tech. Elect.	4	4
03.134	E.E. Lab IV	0(4)	2

Quarter 11

No.	Course	Cl.	Q.H.
	Soc. Sci./	4	4
	Hum. Elect.		
	Tech. Elects.	8(12)	8(12)

Note: Seven arts and sciences electives (in either social science or humanities subjects) are required for graduation. Two of these may be taken on a pass/fail basis, NOT both in the same quarter.

Four technical electives are required for graduation. Classes before 1982 took 09.106 and 09.107.

Specimen Program in Power Systems**First Year****Quarter 1**

No.	Course	Q.H.
10.150	Calculus I	4
11.203	Physics I	4
*09.108	Comp. for Eng.	4
30.114	Intro. Lit.	4

Quarter 2

No.	Course	Q.H.
10.151	Calculus II	4
11.204	Physics II	4
*09.109	Eng. Graph./Des.	4
12.114	Gen. Chem. I	4

Quarter 3

No.	Course	Q.H.
10.152	Calculus III	4
11.205	Physics III	4
12.115	Gen. Chem. II	4
30.115	Gr. Th. Lit.	4

Second Year**Quarter 4**

No.	Course	Q.H.
10.153	Calculus IV	4
11.206	Physics IV	4
03.111	Circ. & Syst. I	4
	Soc. Sci./	
	Hum. Elect.	4
03.151	E.E. Lab I-A	1
11.110	Physics Lab I	1

Quarter 5

No.	Course	Q.H.
10.154	Calculus V	4
02.163	Mechanics	4
03.112	Circ. & Syst. I	4
	Soc. Sci./	
	Hum. Elect.	4
03.152	E.E. Lab I-B	1
11.111	Physics Lab II	1

Third Year

Quarter 6

No.	Course	Q.H.
10.155	Math. Analysis I	4
02.130	Thermo. I	4
03.113	Circ. & Syst. III	4
	Soc. Sci./	
	Hum. Elect.	4
03.153	E.E. Lab II-A	1

Quarter 7

No.	Course	Q.H.
10.156	Math. Analysis II	4
03.122	Circ. & Syst. IV	4
03.141	Electronics I	4
	Soc. Sci./	
	Hum. Elect.	4
03.154	E.E. Lab II-B	1

(Quarters 4 & 6 offered Fall & Winter)

(Quarters 5 & 7 offered Spring & Summer)

Fourth Year

Quarter 8 (Fall Only)

No.	Course	Q.H.
*02.131	Thermo. II	4
03.142	Electronics II	4
03.161	Field Theory I	4
03.221	Elec. Pwr. Syst. I	4
03.245	Power Lab I-A	1

Quarter 9 (Spring Only)

No.	Course	Q.H.
03.162	Field Theory II	4
03.177	Intro. to Elec. Mach.	4
03.222	Elec. Pwr. Syst. II	4
	Soc. Sci./Hum. El.	4
03.146	Power Lab I-B	1

Fifth Year

Quarter 10 (Winter Only)

No.	Course	Q.H.
02.236	Nuclear Eng.	4
03.176	Mach. & Syst.	4
03.178	Trans. in Elect. Pwr. Syst.	4
	Soc. Sci./Hum. El.	4
03.234	Power Lab II	2

Quarter 11 (Spring Only)

No.	Course	Q.H.
03.101	Disc. Systems	4
93.170	Enr. & Pub. Pol.	4
	*Tech. Elect.	4
	Tech. Elect.	4

*In Quarters 1 & 2, Classes of 79, 80, and 81 took 09.106, 09.107

In Quarters 7 & 8, Classes of 79 took 02.130 in Qtr. 7 and one SS/H elective in Qtr. 8.

In Quarter 11, only one tech. elect. is required for graduation.

Specimen 5T Transfer Program in Power Systems

Quarter 5T (Fall Only)

No.	Course	Q.H.
10.140	Calc. for Tr. Stud.	5
11.126	Physics Rev.	6
03.119	Circ. & Syst. I	6
*09.108	Comp. for Eng.	4

Quarter 6T (Winter Only)

No.	Course	Q.H.
10.155	Math. Analysis I	4
02.130	Thermo. I	4
03.101	Discr. Syst.	4
03.120	Circ. & Syst. B	6
	*(Note below)	

Quarter 7 (Spring & Summer)

No.	Course	Q.H.
10.156	Math. Analysis II	4
02.163	Mechanics	4
03.122	Circ. & Syst. IV	4
03.141	Electronics I	4
	(Note below)	

Quarter 8 (Fall Only)

No.	Course	Q.H.
02.131	Thermo. II	4
03.142	Electronics II	4
03.161	Field Theory I	4
03.221	Elec. Pwr. Syst. I	4
03.245	Power Lab I-A	1

Quarter 9 (Spring Only)

No.	Course	Q.H.
03.162	Field Theory II	4
03.177	Intro. Elec. Mach.	4
03.222	Elec. Pwr. Syst. II	4
	Soc. Sci./Hum. El.	4
03.246	Power Lab I-B	1

Quarter 10 (Winter Only)

Quarter 11 (Spring Only)

No.	Course	Q.H.	No.	Course	Q.H.
02.236	Nuclear Eng.	4	93.170	Ener. & Pub. Pol.	4
03.176	Mach. & Syst.	4		*Tech. Elect.	4
03.178	Trans. in Elect.			Tech. Elect.	4
	Pwr. Syst.	4			
	Soc. Sci./Hum. El.	4		Soc. Sci./Hum. El.	4
03.234	Power Lab II	2			

*Replaces 09.104.

Notes: Quarter 5T students who have previous experience in Fortran take a general elective instead. Quarter 6T and 7T students with little or no EE lab experience should arrange to take labs in qtrs. 6T and 7T. Quarter 11, only one tech. elective required for graduation.

Specimen 5T Transfer Program in Computer Engineering Option

Quarter 5T (Fall only)

Quarter 6T (Winter only)

Quarter 7T (Spring & Summer)

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
10.140	Calc. for Tr. stud.	5		10.155	Math. Analysis I	4		02.163	Mechanics	4	
11.126	Physics Review	6		02.130	Thermo. I	4		03.122	Circ. & Syst. IV	4	
03.119	Circ. & Syst. A	6		03.101	Discr. Systems	4		03.141	Electronics I	4	
09.104	Comp. Prog. Rev. (Note below)	2		03.120	Circ. & Syst. B (Note below)	6		03.191	Intro. Dig. Comp. II (Note below)	4	

Quarter 8 (Fall & Winter)

Quarter 9 (Spring & Summer)

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
02.199	Materials Sci.	4		03.144	Electronics III	4	
03.142	Electronics II	4		03.162	Field Theory II	4	
03.161	Field Theory I	4		03.281	Mach. Lang. & Assem. Lang. Prog.	4	
03.192	Intro. Dig. Comp. II	4			Soc. Sci./ Hum. Elect.	4	
03.155	E.E. Lab III-A	1		03.156	E.E. Lab III-B	1	

Quarter 10 (Fall & Winter)

Quarter 11 (Spring & Summer)

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
03.282	Program Systems	4			*Tech. Elect.	4	
	*Tech. Elect.	4			*Tech. Elect.	4	
	*Tech. Elect.	4			*Tech. Elect.	4	
	Soc. Sci./ Hum. Elect.	4			*Soc. Sci./ Hum. Elect.	4	
03.134	E.E. Lab IV	2					

Note: Students with little or no E.E. lab experience should arrange to take labs in Quarters 5T, 6T, and 7T. Quarters 10 and 11, Technical electives must be approved by Departmental advisers; only four technical electives required for graduation.

Specimen Program in General Engineering

First Year

Quarter 1

Quarter 2

Quarter 3

No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
10.150	Calculus I	4	10.151	Calculus II	4	10.152	Calculus III	4
11.203	Physics I	4	11.204	Physics II	4	11.205	Physics III	4
*09.108	Comp. for Eng.	4	*09.109	Eng. Graph./Des.	4	30.115	Gr. Th. Lit.	4
30.114	Intro. Lit.	4		Soc. Sci./ Hum. Elect.			Soc. Sci./ Hum. Elect.	4

(Quarters 4, 6, 8, and 10 offered Fall & Winter)

(Quarters 5, 7, and 9 offered Spring & Summer)

Second Year**Quarter 4**

No.	Course	Q.H.
10.153	Calculus IV	4
11.206	Physics IV	4
	Eng. Sci. Elect.	4
	Soc. Sci./	
	Hum. Elect.	4
11.110	Physics Lab I	1

Quarter 5

No.	Course	Q.H.
10.154	Calculus V	4
	Eng. Sci. Elect.	4
	Coord. Study Elect.	4
	Soc. Sci./	
	Hum. Elect.	4
11.111	Physics Lab II	1

Third Year**Quarter 6**

No.	Course	Q.H.
	Eng. Sci. Elect.	4
	Coord. Study Elect.	4
	Coord. Study Elect.	4
	Soc. Sci./	
	Hum. Elect.	4

Quarter 7

No.	Course	Q.H.
	Eng. Sci. Elect.	4
	Eng. Sci. Elect.	4
	Coord. Study Elect.	4
	Soc. Sci./	
	Hum. Elect.	4

Fourth Year**Quarter 8**

No.	Course	Q.H.
	Eng. Sci. Elect.	4
	Eng. Sci. Elect.	4
	Coord. Study Elect.	4
	Coord. Study Elect.	4

Quarter 9

No.	Course	Q.H.
	Eng. Sci. Elect.	4
	Eng. Sci. Elect.	4
	Coord. Study Elect.	4
	Coord. Study Elect.	4

Fifth Year**Quarter 10**

No.	Course	Q.H.
	Eng. Sci. Elect.	4
	Eng. Sci. Elect.	4
	Coord. Study Elect.	4
	Coord. Study Elect.	4

Quarter 11

No.	Course	Q.H.
	Eng. Sci. Elect.	4
	Coord. Study Elect.	4
	Coord. Study Elect.	4
	Coord. Study Elect.	4

*Note: Classes before 1982 took 09.106 and 09.107.

Coordinated Study electives are a group of courses chosen to meet the student's career objectives; these courses will be selected in conjunction with the student's adviser and subject to the adviser's approval.

Specimen Program in Computer Science Option**First Year****Quarter 1**

No.	Course
10.150	Calculus
11.203	Physics
09.250	Prog. & Algor.
30.114	Intro. Lit.

Quarter 2

No.	Course
10.151	Calculus
11.204	Physics
09.129	COBOL
	Soc. Sci./
	Hum. Elect.

Quarter 3

No.	Course
10.152	Calculus III
11.205	Physics III
09.130	File Process.
30.115	Gr. Th. Lit.

Second Year**Quarter 4**

No.	Course
10.153	Calculus IV
11.206	Physics IV
03.281,	
05.201	
or	
93.112	Assemb. Lang.
	Programming
09.250	Prog. & Algorithms
11.110	Physics Lab I

Quarter 5

No.	Course
10.154	Calculus V
03.191	Comp. Des. & Org. I
05.145	Probability
	Soc. Sci./
	Hum. Elect.
11.111	Physics Lab II

Third Year**Quarter 6**

No.	Course
03.285	Discr. Struct./Math
or	
10.210	
05.147	Statistics
03.192	Com. Des. & Org. II
	Soc. Sci./
	Hum. Elect.

Quarter 7

No.	Course
03.282	Syst. Programming
05.202	Data Structures
	Comp. Sci. Elect.
	Soc. Sci./
	Hum. Elect.

Fourth Year**Quarter 8**

No.	Course
09.251	Comp. Design
	Coord. Study
	Coord. Study
	Soc. Sci./
	Hum. Elect.

Quarter 9

No.	Course
09.252	Anal. of Pro. Lang.
10.206	Anal. of Algorithms
	Coord. Study
	Soc. Sci./
	Hum. Elect.

Fifth Year**Quarter 10**

No.	Course
09.291	
or	
03.237	Spec. Project
	Coord. Study
	Coord. Study
	Coord. Study

Quarter 11

No.	Course
09.295	C. S. Seminar
	Coord. Study
	Coord. Study
	Coord. Study

Specimen Program in Industrial Engineering**First Year****Quarter 1**

No.	Course	Q.H.
10.150	Calculus I	4
11.203	Physics I	4
*09.108	Comp. for Eng.	4
30.114	Intro. Lit.	4

Quarter 2

No.	Course	Q.H.
10.151	Calculus II	4
11.204	Physics II	4
*09.109	Eng Graph./Des.	4
12.114	Gen. Chem. I	4

Quarter 3

No.	Course	Q.H.
10.152	Calculus III	4
11.205	Physics III	4
12.115	Gen. Chem. II	4
30.115	Gr. Th. Lit.	4

(*Note: Class of 1981 took 09.106 and 09.107)

Second Year**Quarter 4**

No.	Course	Cl.	Q.H.
05.128	Work Design	3(3)	4
10.153	Calculus IV	4	4
11.206	Physics IV	4	4
39.115	Economics I	4	4
11.110	Physics Lab I	0(3)	1

Quarter 5

No.	Course	Cl.	Q.H.
05.145	Probability	4	4
02.165	Mechanics	4	4
10.154	Calculus V	4	4
39.116	Economics II	4	4
11.111	Physics Lab II	0(3)	1

Third Year**Quarter 6**

No.	Course	Cl.	Q.H.
05.201	Comp. & Prog. I	4	4
03.183	Elec. Eng. I	4	4
	Math Elect.	4	4
05.147	Statistics I	4	4

Quarter 7

No.	Course	Cl.	Q.H.
05.148	Statistics II	4	4
05.161	Operations Res. I	4	4
	Eng. Sci. Elect.	4	4
05.150	Ind. Cost Cont.	4	4

Fourth Year**Quarter 8**

No.	Course	Cl.	Q.H.
05.130	Systems I	4	4
05.240	Dig. Tech.	4	4
05.163	Operations Res. II	4	4
	Soc. Sci./		
	Hum. Elect.	4	4
29.102	Effect. Spkng.	3	3

Quarter 9

No.	Course	Cl.	Q.H.
05.131	Systems II	4	4
05.261	Eng. Econ. &	4	4
	Dec. Thy.		
	Eng. Sci. Elect.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4

Fifth Year**Quarter 10**

No.	Course	Cl.	Q.H.
05.186	Personnel & Organ.	4	4
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4

Quarter 11

No.	Course	Cl.	Q.H.
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Open Elect.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4

Specimen Program in Mechanical Engineering**First Year****Quarter 1**

No.	Course	Cl.	Q.H.
*09.108	Comp. for Eng.	4	4
10.150	Calculus I	4	4
11.203	Physics I	4	4
*30.114	Intro. Lit.	4	4

Quarter 2

No.	Course	Cl.	Q.H.
*09.109	Eng. Graph./Des.	4	4
10.151	Calculus II	4	4
11.204	Physics II	4	4
*12.114	Gen. Chem. I	4	4

Quarter 3

No.	Course	Cl.	Q.H.
10.152	Calculus III	4	4
11.205	Physics III	4	4
*30.115	Gr. Th. Lit.	4	4
*12.115	Gen. Chem. II	4	4

*First-year pattern of two-term courses may vary according to assigned section.

Second Year**Quarter 4**

No.	Course	Cl.	Q.H.
02.165	Mechanics I	4	4
10.153	Calculus IV	4	4
11.206	Physics IV	4	4
11.110	Physics Lab I	0(3)	1
39.115	Econ. Princ.	4	4

Quarter 5

No.	Course	Cl.	Q.H.
02.167	Mechanics II	4	4
02.130	Thermo. I	4	4
10.154	Calculus V	4	4
11.111	Physics Lab II	0(3)	1
	Soc. Sci./		
	Hum. Elect.	4	4

Third Year**Quarter 6**

No.	Course	Cl.	Q.H.
02.131	Thermo. II	4	4
02.166	Mechanics III	4	4
02.192	Meas. & Anal.	4	4
10.155	Math Analysis I	4	4

Quarter 7

No.	Course	Cl.	Q.H.
02.155	Fluid Mechs.	4	4
02.196	Materials Sci.	4(3)	5
10.156	Math Analysis II	4	4
02.168	Mechanics IV	4	4

Fourth Year**Quarter 8**

No.	Course	Cl.	Q.H.
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4

Quarter 9

No.	Course	Cl.	Q.H.
02.150	Heat Transfer	4	4
02.176	Dynamics	4	4
	Tech. Elect.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4

Fifth Year**Quarter 10**

No.	Course	Cl.	Q.H.
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4

Quarter 11

No.	Course	Cl.	Q.H.
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4

Elective Requirements for the Junior and Senior Year (B.S. in M.E.)

Note: Classes before 1982 took 09.106 and 09.107.

There are ten (10) technical electives to be selected by juniors and seniors in addition to four (4) liberal electives. Courses are subject to the following departmental restrictions.

A. Social Sciences/Humanities Electives: (4 required)

These elective arts and sciences courses must be selected from a Department-approved list of humanities and/or social science courses which is available during preregistration.

B. Required Technical Electives: (3 required)

- 03.183 Electrical Engineering (Fall, Winter)
- 02.197 Mech. Behavior of Materials (Fall, Winter)
or
02.198 Material Processing (Spring, Summer)
- 02.146 M.E. Design (Spring - Prereq. 02.145 Fall, Winter)
or
02.147 Engineering Design (Spring)

C. Additional Technical Electives: (7 required)

The remaining technical electives should be chosen after consideration of your professional career objectives and must be approved by your adviser during preregistration in the Department. The majority of these courses must be selected from the Mechanical Engineering elective course offerings. The student's area of concentration determines the recommended courses from which he or she is to choose electives.

Specimen B.S./M.S. Program in Mechanical Engineering

During the first two years of study, students enrolled in the B.S./M.E. Program in Mechanical Engineering pursue a curriculum similar to that of the regular M.E. Program.

Third Year**Quarter 6**

No.	Course	Cl.	Q.H.
02.131	Thermo. II	4	4
02.166	Mechanics III	4	4
02.192	Meas. & Anal.	2(3)	4
10.155	Math Anal.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4

Quarter 7

No.	Course	Cl.	Q.H.
02.155	Fluid Mech.	4	4
02.196	Materials Sci.	4(3)	5
02.168	Mechanics IV	4	4
10.156	Math Anal.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4

Fourth Year**Quarter 8**

No.	Course	Cl.	Q.H.
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Tech. Elect.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4
	Grad. Elect.	2	2
02.826	Math. Methods I	2	2

Quarter 9

No.	Course	Cl.	Q.H.
02.150	Heat Transfer I	4	4
02.176	Dynamics	4	4
	Tech. Elect.	4	4
	Soc. Sci./		
	Hum. Elect.	4	4
	Grad. Elect.	2	2
02.827	Math. Methods II	2	2

Fifth Year**Quarter 10****Quarter 11****Quarter 12**

No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
	Grad. Elect.	8			Grad. Elect.	8			Thesis	6	
	Tech. Elect.	4			Tech. Elect.	4			Tech. Elect.	4	
	Tech. Elect.	4			Tech. Elect.	4			Tech. Elect.	4	
	Seminar	1			Seminar	1			Grad. Elect.	4	

Technical elective requirements are the same as those for the regular Mechanical Engineering program.

Specimen Program in Mechanical Engineering for Transfer Students With Associate's Degree

Third Year**Quarter 5T****Quarter 6T****Quarter 7T**

No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
11.126	Physics Rev.	6	02.131	Thermo II	4	02.155	Fluid Mechs. I	4
10.140	Calc. for Tr. Stdnts.	5	10.155	Math Anal. I	4	02.196	Materials Sci.	4
02.130	Thermo. I	4	02.166	Mechanics III	4	10.156	Math. Anal. II	4
09.104	Comp. Prog. Rev.	2	02.192	Meas. & Anal.	4	02.168	Mechs. IV	4

(B.S. in M.E.)

A. Social Sciences/Humanities Electives: (4 required)

These elective arts and sciences courses must be selected from a Department-approved list of humanities and/or social science courses which is available during preregistration.

B. Required Technical Electives: (3 required)

- 03.183 Electrical Engineering (Fall, Winter)
- 02.197 Mech. Behavior of Materials (Fall, Winter)
or
02.198 Material Processing (Spring, Summer)
- 02.146 M.E. Design (Spring - Prereq. 02.145 Fall, Winter)
or
02.147 Engineering Design (Spring)

C. Additional Technical Electives: (7 required)

The remaining technical electives should be chosen after consideration of your professional career objectives and must be approved by your adviser during preregistration in the Department. The majority of these courses must be selected from the Mechanical Engineering elective course offerings. The student's area of concentration determines the recommended courses from which he or she is to choose electives.

Lincoln College

Specimen Program in Electrical Engineering Technology

First Year

Quarter 1				Quarter 2				Quarter 3			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
10.407	Col. Alg. & Trig. I	4	4	10.408	Col. Alg. & Trig. II	4	4	10.420	Calculus I	4	4
11.417	Physics I	4	4	11.418	Physics II	4	4	11.419	Physics III	4	4
30.113	Fresh. Writ.	4	4	30.114	Intro. Lit.	4	4	30.115	Gr. Th. Lit.	4	4
09.421	Comp. Prog. I	2	2	09.422	Comp. Prog. II	2	2	09.423	Comp. Prog. III	2	2
09.461	Eng. Des. Graph. I	2	2	09.462	Eng. Des. Graph. II	2	2	09.463	Eng. Des. Graph. III	2	2
				11.473	Physics Lab I	2	2	11.474	Physics Lab II	2	2

Second Year

Quarter 4				Quarter 5			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
10.421	Calculus A	4	4	10.422	Calculus B	4	4
03.451	Circuit Anal. I	4	4	03.452	Circuit Anal. II	4	4
11.420	Physics IV	4	4	03.440	Phys. Electronics	4	4
	A. & S. Elect.	4	4	03.424	Circuits Lab. I	2	2
					A. & S. Elect.	4	4

Third Year

Quarter 6				Quarter 7			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
03.460	Eng. Anal. I	4	4	03.430	Energy Conversion	4	4
03.453	Circuit Anal. III	4	4	03.454	Circuit Anal. IV	4	4
03.411	Electronics I	4	4	03.412	Electronics II	4	4
39.115	Prin. Economics	4	4	03.410	Electrical Meas.	4	4
03.425	Circuits Lab II	2	2	03.423	Electronic Lab	4	4

Fourth Year

Quarter 8				Quarter 9			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
03.470	Digital Comps.	4	4	03.477	Control Eng.	4	4
03.413	Electronics III	4	4	03.428	Adv. Elec. Lab II	2	2
03.427	Adv. Elect. Lab I	2	2		Tech. Elect.	4	4
	Tech. Elect.	4	4		A. & S. Elect.	4	4
	(A or B)						

Fifth Year

Quarter 10				Quarter 11			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
03.478	Control Eng. II	2	2	03.437	Dist. Systems	4	4
03.429	Adv. Elect. Lab II	2	2	02.419	Mechanics	4	4
	A. & S. Elect.	4	4		A. & S. Elect.	4	4
	Tech. Elect.	4	4		Tech. Elect.	4	4
	(A or B)						

Technical Elective Sequences

(A) Power Systems Sequence

No.	Course	Q.H.
03.462	Basic Pwr. Syst. I	4
03.463	Basic Pwr. Syst. II	4
03.464	Basic Pwr. Syst. III	4
	Tech. Elect.	4

(B) Communications Engineering Sequence

No.	Course	Q.H.
03.417	Prin. of Com. Sys I	4
03.418	Prin. of Com. Sys II	4
03.419	Prin. of Com. Sys III	4
	Tech. Elect.	4

Specimen Program in Mechanical Engineering Technology**First Year**

Quarter 1				Quarter 2				Quarter 3			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
10.407	Col. Alg. & Trig. I	4	4	10.408	Col. Alg. & Trig. II	4	4	10.420	Calculus I	4	4
11.417	Physics I	4	4	11.418	Physics II	4	4	11.419	Physics III	4	4
30.113	Fresh. Writ.	4	4	30.114	Intro. Lit.	4	4	30.115	Gr. Th. Lit.	4	4
09.421	Comp. Prog. I	2	2	09.422	Comp. Prog. II	2	2	09.423	Comp. Prog. III	2	2
09.461	Eng. Des. Graph.	2	2	11.473	Phys. Lab I	2	2	11.474	Phys. Lab II	2	2
				09.462	Eng. Des. Graph. II	2	2	09.463	Eng. Des. Graph. III	2	2

Second Year

Quarter 4				Quarter 5			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
10.421	Calculus A	4	4	10.422	Calculus B	4	4
02.411	Mechanics I	4	4	02.412	Mechanics II	4	4
09.464	Eng. Des. Graph.	4	4	02.414	Stress Anal. I	4	4
02.431	Materials Sci. I	4	4	02.461	Machine Shop (Elect. on petition with experience)	4	4

Third Year

Quarter 6				Quarter 7			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
02.413	Mechanics III	4	4	03.420	Elec'y. & Elect'es.	4	4
02.415	Stress Anal. II	4	4	02.468	Mech. Tech. Lab II	2	2
02.462	Mech. Tech. Lab I	2	2	02.422	Thermo. II	4	4
02.421	Thermo. I	4	4	02.441	Fluid Mech. I	4	4
39.115	Princ. of Econ.	4	4				

Fourth Year

Quarter 8				Quarter 9			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
02.417	Mech. Des. I	4	4	02.418	Mech. Des. II	4	4
02.469	Heat Tech. Lab I	2	2	02.464	Mech. Tech. Lab III	2	2
02.422	Fluid Mech. II	4	4	02.423	Thermo. III	4	4
	Tech. Elect.	4	4		Tech. Elect.	4	4
	A. & S. Elect.	4	4		A. & S. Elect.	4	4

Fifth Year

Quarter 10				Quarter 11			
No.	Course	Cl.	Q.H.	No.	Course	Cl.	Q.H.
02.466	Heat Tech. Lab II	2	2	02.467	Project Lab	4	4
02.424	Thermo. IV	4	4		Tech. Elect.	4	4
	Tech. Elect.	4	4		Tech. Elect.	4	4
	A. & S. Elect.	4	4		A. & S. Elect.	4	4
	A. & S. Elect.	4	4				

Technical electives must be chosen from the following list:

02.416	Stress Analysis C	4	02.425	Thermodynamics E	4
02.452	Exp. Stress Analysis	4	10.423	Differential Equations	4
02.451	Mech. Vibrations	4	03.421	Elec. & Electronics	4
02.432	Materials B	4	03.490	Optical Instru.	4
02.433	Applied Metallurgy	4	04.481	Nuclear Technology	4

College of Nursing

Specimen Program for Baccalaureate Degree in Nursing

First Year

Quarter 1			Quarter 2			Quarter 3		
No.	Course	Q.H.	No.	Course	Q.H.	No.	Course	Q.H.
18.141	Biology	4	12.106	Gen. Chem.	5	12.107	Gen. Chem.	5
23.101	West. Civ.	4	18.142	Biology	4	18.148	Anatomy	4
30.113	Fresh. Writ.	4	30.114	Intro. Lit.	4	23.102	West. Civ.	4
80.201	Nursing	3	80.202	Nursing	3	80.203	Nursing	3

Second Year

Quarter 4			Quarter 5		
No.	Course	Q.H.	No.	Course	Q.H.
18.120	Microbiology	4	18.144	Physiology	4
18.143	Physiology	4	19.106	Found. Psych. II	4
19.105	Found. Psych. I	4	20.100	Soc. Anthropology	4
80.204	Nursing	5	80.205	Nursing	5

Third Year

Quarter 6			Quarter 7		
No.	Course	Q.H.	No.	Course	Q.H.
19.141	Growth & Dev. I	4	19.130	Social Psych.	4
21.100	Princ. of Soc.	4	19.142	Growth & Dev. II	4
80.207	Nursing	7	81.201	Med. Surg. Nurs.	9
73.116	Pharmacodyn.	3			

Fourth Year

Quarter 8			Quarter 9		
No.	Course	Q.H.	No.	Course	Q.H.
82.201	Mat. Child Nurs.	9	83.201	Psych.	
	Hum. Elect.	4		Ment. Hlth. Nurs.	9
	Elective	4		Elective	4
				Hum. Elect.	4

Fifth Year

Quarter 10			Quarter 11		
No.	Course	Q.H.	No.	Course	Q.H.
84.201	Pub. Hlth. Nsg.	9	85.201	Contemp. Nurs.	9
	Elective	4		Elective	4
	Elective	4			

176 Q.H. needed for graduation.

Degrees

The College of Nursing offers a two-year program for Licensed Practical Nurses leading to the Associate in Science degree in Nursing, a five-year program leading to the Bachelor of Science degree in Nursing, and Registered Nurse day and evening programs leading to the Bachelor of Science degree in Nursing. The length of these programs vary depending on the individual's interest and ability to achieve advanced placement.

Quantitative Requirements

Candidates for the Associate in Science or Bachelor of Science degree must successfully complete all of the prescribed courses in the applicable curriculum. For the Associate in Science degree this totals 110 quarter hours. For the Bachelor of Science degree this totals 176 quarter hours. The prescribed periods of cooperative work at health agencies associated

with the University are not required of the Bachelor of Science Programs for Registered Nurses or the Associate students enrolled in Science Program for Licensed Practical Nurses.

College of Pharmacy and Allied Health Professions

Specimen Program in Pharmacy (Five-Year Cooperative)

First Year

Quarter 1					Quarter 2					Quarter 3				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
	Electives			8		Elective	4		4	71.259	Basic Pharm.	3		3
*10.104	Fund. Math	4		4	18.131	Gen. Biology	3	3	4	12.107	Gen. Chem.	4	3	5
*10.105	Funct. Cal.	4		4	*10.105	Funct. Cal.	4		4	18.132	Animal Bio.	3	4	4
12.106	Gen. Chem.	4	3	5	*10.107	Calculus	4		4	30.114	Intro. Lit.	4		4
					30.113	Fresh. Writ.	4		4					

Second Year

Quarter 4 (Entire Class)					Quarter 4A (Entire Class)					Quarter 5				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
	All take:					All take:				71.261	Phys. Pharm.	4		4
12.144	Org. Chem. I	4	3	5	11.175	Phys. Life Sci. III	4		4	73.204	Anat. & Phys.	4	3	5
11.171	Phys. Life Sci. I & 4			4							A. & S. Elects.			8
	Group 1 take:				12.145	Org. Chem. II	4	3	5		Trans. Only:			
73.202	Anat./Phys.	4	3	5		Group 1 take:				71.259	Basic Pharm.	3		3
	A. & S. Elect.			4		Electives			8					
	Group 2 take:					Group 2 take:								
	A. & S. Elects.			8	73.202	Anat./Phys.	4	3	5					
						A. & S. Elect.			4					

Third Year

Quarter 6					Quarter 7				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
71.262	Pharm. 1	3	3	3	72.230	Drug Anal.	4	3	5
72.270	Med. Chem.				72.271	Med. Chem.			
	Pharmacol. I	5		5		Pharmacol. II	5		5
93.151	Gen. Bio.				73.223	Clin. Bio.	3	3	4
	Chemistry	4		4		Chemistry			
18.120	Microbiology	3	4	4		A. & S. Elect.			4
	Trans. Only:								
73.202	Anat./Phys.	4	3	5					
73.204	Anat. & Phys.	4	3	5					

Fourth Year**Quarter 8****Quarter 9**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
71.263	Pharmacy II	3	3	4	71.264	Bio. Pharm.	4		4
73.245	Pathology	4		4	72.273	Med. Chem.			
	Prof. Elect.	4		4		Pharmacol. IV	5		5
72.272	Med. Chem.				73.230	Pharmacol. Lab II		3	1
	Pharmacol. III	5		5	73.247	Toxicology	4		4
73.229	Pharmacol. Lab I		3	1	71.251	Clinc. Phar.	3		3

Fifth Year**Quarter 10****Quarter 10A****Quarter 11**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
71.284	Pro. Prac. Lab I		3	1	71.283	Pro. Prac. I	4		4	71.245	Pharm. Admin.	4		4
71.283	Pro. Prac. I	4		4	71.284	Pro. Prac. Lab I		3	1	71.286	Pro. Prac. Lab II		3	1
	or					or				71.288	Prof. Pre. Prac. II			4
	Prof. Elect.			4	71.286	Pro. Prac. Lab II		3	1		Prof. Elect.			4
65.218	Pub. Hlth.	3		3	71.288	Pro. Prac. II	4		4		or			
71.243	Pharm. Juris	4		4	65.218	Pub. Hlth.	3		3	71.254	Clin. Pharm.	2	36	14
90.251	Plac. Tech.	1		1	71.243	Pharm. Juris	4		4					
	or				90.251	Plac. Tech.	1		1					
	Prof. Elect.			4		or								
	or					Prof. Elect.			4					
71.254	Clin. Pharm.	2	36	14	71.245	Pharm. Admin.	4		4					
						or								
						Prof. Elect.			4					
						or								
					71.254	Clin. Pharm.	2	36	14					

*Minimum math requirement: 10.107

**12.103 and 12.104 General Chemistry may be taken in place of 12.106 and 12.107, but one year of high school calculus is recommended.

Specimen Program in Dental Hygiene***First Year****Quarter 1****Quarter 2****Quarter 3**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
12.101	Gen. Chem.	2	3	3	12.102	Gen. Chem.	2	3	3	18.120	Microbiol.	3	4	4
18.114	Func. Anat. I	4	3	5	18.115	Func. Anat. II	4	3	5		Prof. Courses			
	Prof. Courses					Prof. Courses								

Second Year**Quarter 4****Quarter 4A****Quarter 5**

No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
19.105	Found. Psych. I	4		4	30.113	Fresh. Writ.	4		4	21.100	Intro. Soc.	4		4
	Prof. Courses					Prof. Courses				30.114	Intro. Lit.	4		4
											Prof. Courses			

*Students are admitted directly to the Forsyth School for Dental Hygienists and should contact the School for catalogs, applications, and complete program information by writing to:

Forsyth School for Dental Hygienists
140 The Fenway
Boston, Massachusetts 02115

Specimen Program in Medical Laboratory Science (Five-Year Cooperative)

First Year

Quarter 1					Quarter 2					Quarter 3				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
10.104	Fund. Math or	4		4	10.105	Func. & Bas. Calc. or	4		4		Elect. Elect.	4		4
10.105	Func. and Bas. Calc.	4		4	10.107	Calculus	4		4	30.114	Intro. Lit.	4		4
12.103	Gen. Chem. or	4	(3)	5	12.104	Gen. Chem. or	4	(3)	5	87.150	Basic M.L. Sci.	2	(3)	3
12.106	Gen. Chem.	4	(3)	5	12.107	Gen. Chem.	4	(3)	5	87.151	Basic Hem. I	2	(3)	3
18.131	Gen. Bio.	3	(3)	4	18.132	Animal Bio. Elective	3	(4)	4	87.134	Dyn. of Hlth.	2		2
30.113	Fresh. Writ.	4		4	87.100	Med. Lab Orient.	1		1					

Second Year

Quarter 4 Entire Class*					Quarter 4A Entire Class*					+ Quarter 5				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
12.144	Org. Chem. I Elect.	4	(3)	5	87.152	Bas. M.L. Sci. Hem. II	2	(3)	3	12.145	Org. Chem. II	4	(3)	5
18.143	Hum. Phys. I	3	(3)	4	87.153	Bas. M.L. Sci. Immunohem.	2	(3)	3	18.144	Hum. Phys. II	3	(3)	4
87.154	Bas. M.L.S. Micro.	4	(6)	6	12.171	Anal. Chem. Elect. Elect.	3	(3)	4	87.155	Clin. Chem. Elect.	4	(3)	5
							4		4			4		4

+ Regular co-op sequence starts here.

+ MLT applies for clinical.

* Depending on group assignment, this is a sample of the second year.

Third Year

Quarter 6					*Quarter 7				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
18.135	Gen. & Dev. Bio.	3	(4)	4	18.136	Cell Bio.	3	(4)	4
11.171	Bas. Pharm. I	4		4	11.172	Bas. Phys. II	4		4
87.106	Bas. M.L. Sci. Elect. & Instru. I			(3)	18.221	Gen. Micro. Elect.	3		3
87.250	Com. Elect.	4		4			4		4

*M.T. apply for Clinical

Fourth Year

Quarter 8					Quarter 9				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
87.162	Hematology- Ap. Study	3		3	87.162	Hematol.- Ap. Study	3		3
87.163	Immunohem.- Ap. Study or	2			87.163	Immunohem.- Ap. Study or	2		2
87.164	Clin. Micro.- Ap. Study or	5		5	87.164	Clin. Microbiol.- Ap. Study or	5		5
87.165	Clin. Chem.- Ap. Study	5		5	87.165	Clin. Chem.- Ap. Study	5		5
87.203	Med. Serology (Fall) or	1	(3)	2	87.254	Clin. Microbio.	5		5
87.204	Med. Parasit. (Winter)	1	(3)	2	87.280	M.L. Sci. Spec. Top.	2		2
87.252	Hematology	3		3					
87.253	Immunohem. or	2		2					
87.255	Clin. Chem.	5		5					

Fifth Year

Quarter 10

No.	Course	Cl.	L.	Q.H.
87.162	Hematol.- Ap. Study	3		3
87.163	Immunohem.- Ap. Study or	2		2
87.164	Clin. Microbiol.- Ap. Study or	5		5
87.165	Clin. Chem.- Ap. Study	5		5
87.203	Med. Serology (Fall) or	1	(3)	2
87.204	Med. Parasit. (Winter)	1	(3)	2
87.252	Hematology	3		3
87.253	Immunohem. or	2		2
87.255	Clin. Chem.	5		5

Quarter 11

No.	Course	Cl.	L.	Q.H.
	Bio. Elect. Elective	4		4
87.221	M.L. Sci. Mgt.	2		2
87.226	Health Sci. Ed.	2		2
87.281	M.L. Sci. Sem.	2		2
87.107	Bas. Elect. & Instrum. II		(3)	1
87.134	Dyn. of Hlth Care	2		2

A minimum of 12 Q.H. of humanities electives
12 Q.H. of social science electives
12 Q.H. of other electives

11.117 may be substituted for 11.171

11.118 may be substituted for 11.172

12.105 may be substituted for 12.171

Specimen Program in Health Record Administration (Five-Year Cooperative)

First Year

Quarter 1

No.	Course	Cl.	L.	Q.H.
10.101	Basic Math	4		4
18.131	Gen. Bio.	3	3	4
19.105	Found. Psych I	4		4
30.113	Fresh. Writ.	4		4
86.158	Orient. Hlth. Rec. I	1		1

Quarter 2

No.	Course	Cl.	L.	Q.H.
10.102	Basic Math	4		4
30.114	Intro. Lit.	4		4
18.132	Animal Bio.	3	4	4
	Mod. Lang. or	4		4
*22.101	Pol. Sci.	4		4
86.159	Orientation Hlth. Rec. II	1		1

Quarter 3

No.	Course	Cl.	L.	Q.H.
*	Mod. Lang. or	4		4
*22.102	Amer. Govt.	4		4
19.106	Found. Psych. II	4		4
	A. & S. Elect.	4		4
18.121	Microbio.	3		3

Second Year

Quarter 4

No.	Course	Cl.	L.	Q.H.
18.114	Func. Anat. I	4	3	5
*23.101	West. Civ. or	4		4
*39.115	Econ. Prin.	4		4
45.209	Org. Behav. I	4		4
21.100	Sociology	4		4
87.134	Dyn. of Hlth.	2		2

Quarter 5

No.	Course	Cl.	L.	Q.H.
18.146	Anat. & Phys. II	3	3	4
*23.102	West. Civ. or	4		4
*39.116	Econ. Prin. or	4		4
*39.130	Med. Econ.	4		4
45.210	Org. Behav. II	4		4
10.108	Prob. & Stat.	4		4

Third Year

Quarter 6

No.	Course	Cl.	L.	Q.H.
86.102	Hosp. Law	2		2
86.151	Hlth. Rec. Sci. I	3	3	4
86.107	Med. Term.	4		4
86.112	Med. Science I Elect.	3		3
		4		4

Quarter 7

No.	Course	Cl.	L.	Q.H.
86.162	Mng. & Prn. Hlth.	4		4
86.113	Med. Sci. II	3		3
86.152	Hlth. Rec. Sci. II	3	3	4
	Comm. Skills Course	4		4

Fourth Year

Quarter 8					Quarter 9				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
86.153	Hlth. Rec.				86.165	Spec. Topic II			2
	Sci. III	3	3	4	86.164	Spec. Topic I			2
05.127	Wrk. Des. Hlth.	4		4	86.166	Ap. Hlth. Stat.	4		4
86.164	Spec. Topic I			2	86.154	Hlth. Rec.			
86.165	Spec. Topic II			2		Sci. IV	3	3	4
86.173	Clin. Sem.	2		2	86.257	Org. & Mgt.			
86.260	Hlth. Rec. Prac.			3		Med. Rec. I	3	3	4
86.160	Intro. to Data				86.260	Hlth. Rec. Prac.			3
	Proc. Hlth.				86.261	Hlth. Rec. Prac.			1
	Sci.	4		4	86.264	Ap. Hlth. Rec.			
						Dir. III			4
					86.161	Qual. Assur.	4		4

Fifth Year

Quarter 10					Quarter 11				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
86.164	Spec. Topic I			2		Elective			4
86.165	Spec. Topic II			2	86.157	Sem. Hlth. Rec.	2		2
86.258	Org. & Mgt.				87.226	Hlth. Sci. Ed.	2		2
	Med. Rec. II	3	3	4	86.164	Spec. Topic I			2
86.264	Hlth. Rec.				86.165	Spec. Topic II			2
	Dir. III			4	86.168	Med. Comp. Ap.			4
86.169	Indep. Study			4					

Specimen Program in Respiratory Therapy B.S.
(Five-Year Cooperative)

First Year

Quarter 1					Quarter 2					Quarter 3				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
10.104	Fund. Math	4		4	10.105	Funct. Calc.	4		4	11.137	Bas. Physics	3		4
12.106	Gen. Chem.	4	3	5	11.136	Bas. Physics	3		4	12.107	Gen. Chem.	4	3	5
18.141	Bas. Anim. Bio.	3	3	4	18.142	Bas. Animal				18.120	Microbio.	3	4	4
30.113	Fresh. Writ.	4		4		Bio. II	3	4	4	86.213	Resp. Ther.			
86.211	Resp. Ther. Sem.				30.114	Intro. Lit.	4		4		Sem.	1		4
	I	1		1	86.103	Bas. Med.					A. & S. Elect.			4
						Term.	2		2					
					86.212	Resp. Ther.								
						Sem. II	1		1					

Second Year

Quarter 4					Quarter 4A					Quarter 5				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
73.202	Anat./Phys.	4	3	5	73.117	Phar./Respir.	4		4	86.203	Prof. Prac. Lab	3		1
86.201	Prof. Prac. Lab I		3	1	73.204	Anat. & Phys.	4	3	5	86.214	Clin. Sem. I	1		1
86.221	Patient Care	2		2	86.202	Prof. Prac.				86.223	Resp. Care	3		3
86.220	Card. Pul. Phys.	4		4		Lab II		3	1	86.102	Hosp. Law	2		2
	Psych./Soc.				86.222	Resp. Care	3		3	86.228	Clin. Prac. I		24	6
	Elect.			4	86.227	Cardio.-Pul.								
						Dis.	4		4					

Third Year

Quarter 6					Quarter 7**				
No.	Course	Cl.	L.	Q.H.	No.	Course	Cl.	L.	Q.H.
*12.144	Org. Chem. I	4	(3)	5	*12.145	Org. Chem. II	4	(3)	5
86.204	Prof. Prac. IV		(3)	1	86.205	Cardio.-Pul. Lab		(3)	1
86.210	Clin. Prac. II		(16)	4	86.225	Cardio.-Pul. Lab 3			3
86.215	Clin. Sem. II	1		1	86.281	Perin. Care	2		2
86.224	Resp. Care	3		3					

Fourth Year

Quarter 8

No.	Course	Cl.	L.	Q.H.
86.102	Hosp. Law	2	2	
86.112	Med. Sci. I	3	3	
86.216	Adv. Rth. Sem. I	1	1	
86.271	Adv. Life Sys. I	4	4	
86.278	Adv. Med. Monit.	4	4	

Quarter 9

No.	Course	Cl.	L.	Q.H.
86.162	Mng. & Prn. Hlth.	4	4	
86.217	Adv. Clin. Sem. II	1	1	
86.272	Adv. Life Sys. II	4	4	
86.274	Adv. Clin. Phys. A. & S. Elect.	4	4	

Fifth Year

Quarter 10

No.	Course	Cl.	L.	Q.H.
86.218	Adv. Clin. Sem. III	1	1	
86.276	Neon. & Ped. Pat.	4	4	
86.277	Ind. Study		(8)	2
86.279	Prac. Clinic A. & S. Elect.		4	

Quarter 11

No.	Course	Cl.	L.	Q.H.
86.219	Adv. Clin. Sem. IV	1	1	
86.273	Adv. Emer. Care	4	4	
86.280	Prac. Critic. A. & S. Elect.	4	(8)	2
	A. & S. Elect.	4	4	

*For A.S. program, substitute 86.102 & 86.112 for 12.144; A. & S. Elective for 12.145

**Final quarter for A.S. program

Course Numbering Program

The number to the left of the decimal point indicates the academic department offering the course. The three digits after the decimal point differentiate the courses within the department.

Accounting	41.	Health Education	65.
African-American Studies	25.	History	23.
Allied Health Professions	86.-87.	Industrial Engineering	05.
Anthropology	20.	Interdisciplinary	93.
Art	27.	International Business	46.
Biology	18.	Italian	35.
Business, General	49.	Journalism	38.
Chemical Engineering	04.	Latin	36.
Chemistry	12.	Management	45.
Civil Engineering	01.	Marketing	43.
Cooperative	90.	Mathematics	10.
Criminal Justice	92.	Mechanical Engineering	02.
Drama, Speech, and Communications	29.	Military Science	91.
Earth Sciences (Geology)	16.	Music	28.
Economics	39.	Nursing	80.-85.
Education, Foundations	50.	Pharmacy and Toxicology	71.-73.
Education, Curriculum and Instruction	51.	Philosophy and Religion	26.
Education, Speech and Hearing	55.	Physical Education	60.-62.
Education, Rehabilitation	56.	Physical Therapy	64.
Electrical Engineering	03.	Physics	11.
English	30.	Political Science	22.
Finance and Insurance	44.	Psychology	19.
French	31.	Recreation	63.
German	33.	Russian	34.
Graphic Science	09.	Sociology	21.
		Spanish	32.
		Transportation	48.

Classes at Northeastern University are scheduled in different modules.

In assessing quarter weights for courses, the following statement applies:

One quarter-hour of credit is equal to 50 minutes of instruction per week, plus two hours of preparation.

Civil Engineering

The course descriptions listed under Civil Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or method of approach may vary from term to term.

01.101 Special Topics 4 Q.H.

(Prereq. Outstanding academic performance)

An individual effort resulting in a definitive report in an area within the field of civil engineering selected by the student and adviser with approval by the Department. Work to be performed in both Quarters 10 and 11, equivalent to two quarter-hours each quarter. Final grade to be awarded in Quarter 11.

01.102 Special Topics in Engineering 4 Q.H.

(Prereq. permission of instructor)

An individual or group effort (normally resulting in a definitive report) in a new area of study selected by the student(s) and adviser.

01.105 Civil Engineering Systems 4 Q.H.

(Prereq. 10.154)

Introduction to system synthesis and optimization techniques. The course is designed primarily for civil engineering students interested in planning and management in the fields of construction, transportation, environmental, and structural engineering. Topics include calculus method, linear programming, network analysis, critical path scheduling, and dynamic programming.

01.116 Engineering Measurements 4 Q.H.

Study will focus on the following subjects: the methods and instruments utilized to perform engineering measurements; errors and reliability; errors in computing; application to problems

of land surveying, route surveying, and topographical, hydrographical, and construction surveys.

01.117 Engineering Measurements Laboratory 2 Q.H.*

To be taken simultaneously with 01.116. Fieldwork problems to expand and reinforce the lecture material of 01.116.

01.120 Fluid Mechanics I 4 Q.H.
(Prereq. 01.140)

Fluid properties; statics; kinematics; balance equations for mass, momentum and energy in differential and macroscopic (control volume) formulation; fluid resistance in pipe flow, continuous and local losses; dimensional analysis and dynamic similitude.

01.122 Hydraulic Engineering 4 Q.H.
(Prereq. 01.120)

Introduction to open channel flow; fluid resistance, flow formulas, specific energy theory, hydraulic jump, water surface profiles in gradually varied flow, channel controls, discharge determination; design considerations for sewer systems; introduction to hydrology: rational method and design of storm drainage systems; unit hydrograph method; water supply systems: pipe network analysis, reservoir sizing, pump characteristics.

01.135 Construction Engineering 4 Q.H.
Organizational aspects of the construction process; job scheduling and control; cost estimating and bidding; construction methods and equipment; productivity of construction; quality assurance; value engineering, specification writing; contracts and claims.

01.136 Highway Engineering 4 Q.H.
A general approach to highway engineering, including administration, economic factors, planning, environmental impacts, geometric design, drainage, and the design of flexible pavements.

01.140 Structural Mechanics I 4 Q.H.
(Prereq. Freshman Physics)
Statics of particles and rigid bodies in two and three dimensions. Analysis of internal forces in trusses and beams. Centroids and centers of gravity of lines, area, and volumes. Moments of inertia of areas and masses.

01.141 Structural Mechanics II 4 Q.H.
(Prereq. 01.140)
Continuation of 01.140 with special emphasis on the elastoplastic and plastic behavior of materials. Additional topics in torsion. Additional topics in bending and curved beams. Additional topics in shear to include shear flow and shear center. Compound stresses including elastic and plastic interaction. Continuation of column buckling. Yield and fracture criteria.

01.142 Structural Mechanics III 4 Q.H.
(Prereq. 01.141)
Analysis of stress; Mohr's circle. Definition of

strain. Mechanical properties of materials. Analysis of stress and deformation for members subjected to axial load and torsion. Shear and bending moment diagrams. Analysis of stress and deformation of beams due to bending. Shear flow and stress in beams. Elastic and plastic theory. Introduction to column buckling.

01.143 Structural Analysis I 4 Q.H.
(Prereq. 01.141)

Review of statics; reactions, shear and bending-moment diagrams, bar forces in trusses. Influence lines for statically determinate structures. Deflections by virtual work and moment area methods. Analysis of indeterminate structures by consistent deformations, slope deflections and moment distribution.

01.150 Concrete Design I 4 Q.H.
(Prereq. 01.143)

Behavior of reinforced concrete elements; strength design of flexural members of bending, shear and axial force; stocky columns.

01.152 Concrete Design II 4 Q.H.
(Prereq. 01.150)

Strength design of reinforced concrete structural systems, including continuous beams, frames, floors and roofs; slenderness effects in columns. Introduction to two-way slab systems and prestressed concrete.

01.160 Structural Design I 4 Q.H.
(Prereq. 01.141)

Design of steel members subjected to tension, compression, bending, and combinations of loading. Introduction to plastic analysis and design. Design of connections, braced frames, and rigid frames.

01.161 Structural Design II 4 Q.H.
(Prereq. 01.160)

Design of steel plate girders, bridges, composite construction in bridges and buildings. Additional types in plastic analysis and design. Design for lateral loads on high-rise buildings.

01.174 Foundation Engineering 4 Q.H.
(Prereq. 01.178, 01.179)

Evaluation of site survey and boring data for foundations. Determination of soil bearing capacity, design of spread footings, pile and caisson foundations. Design of retaining walls and braced sheeting. Selected topics on settlements and slope stability.

01.175 Geotechnology 4 Q.H.
(Prereq. 01.180)

An introduction to the geological sciences as they apply to civil engineering practice for the purpose of insuring that significant geologic features affecting the location, design, construction, operation and maintenance of engineering projects are recognized and adequately taken into account.

01.178 Soil Mechanics 4 Q.H.
(Prereq. 01.140)

Soil classification, soil-water phase relationships: Introduction to ground water seepage, consolidation theory, strength properties of soils, stress distributions in soils due to surface loads, lateral earth pressures, bearing capacity of shallow footings.

01.179 Soil Mechanics Laboratory 2 Q.H.*

To be taken simultaneously with 01.178. Laboratory exercises in soil classification, seepage, shear strength, consolidation, and triaxial testing.

01.180 Materials 4 Q.H.

(Prereq. Freshman Chemistry)

The fundamentals of the behavioral classification of materials, such as metals, polymers, colloids, glasses, and composites. Other topics will include the significance of phase transformations, visco-elastic behavior and corrosion mechanisms.

01.193 Environmental Engineering I 4 Q.H.

An introduction to utilization and protection of the environment, including assessment of environmental quality, water and waste-water technology, air pollution control and solid waste management. Emphasis on the engineering approach to the management of the air-water-land environmental complex. Open to all engineering students.

01.194 Environmental Engineering II 4 Q.H.

(Prereq. 01.193)

Development of fundamental physical, chemical and biological phenomena of water and waste-water systems, with engineering applications in water technology, from supply to final disposal.

01.195 Environmental Engineering III 4 Q.H.

(Prereq. 01.122, 01.194)

Further consideration of water and waste-water technology with emphasis on engineering applications; pumping, land disposal, chemical feeding, treatment plant hydraulics, and other special problems are considered.

01.196 Environmental Design 4 Q.H.

(Prereq. 01.122, 01.194, 01.195 to be taken concurrently)

A combination of individual design projects and environmental laboratory sessions to develop the engineering approach to solving problems in water and waste-water management.

01.197 Survey of Environmental Problems 4 Q.H.

(Enrollment limited to non-engineers)

Survey of problems associated with man's use of the environment; interrelationship of the air-water-land complex, with emphasis on ecological stresses produced and methodologies for assessing and controlling man's environmental impact.

01.206 Applied Probability Theory for Civil Engineers 4 Q.H.

(Prereq. 10.154)

The basic elements of probability theory and their use via the solution of various civil engineering problems encountered in fluid mechanics, construction management, structures, transportation, etc. Probability of events, random variables and distribution, derived distribution, expectation, and common probability models.

01.207 Technology Assessment 4 Q.H.

The fundamental concepts of technology assessment will be covered, including the market system, externalities, decision analysis, risk acceptance, and the problems of scale and technological monocultures. The unintended impacts or the higher order effects of technologies will be stressed throughout the course.

01.210 Legal Aspects of Civil Engineering 4 Q.H.

Description and evaluation of the various types of contracts for engineering services and construction, procedures and formats for submitting bids, procedures for filing claims, legal steps to avoid liabilities.

01.234 Transportation Analysis and Planning 4 Q.H.

Principles of transportation planning, including organization, policy planning, goals and objectives, analytical processes, modal characteristics and integration, interdisciplinary studies, systems design, economics and finance, environmental concerns, planning in developing countries.

01.244 Structural Analysis II 4 Q.H.

(Prereq. 01.143)

Matrix analysis of all classes of indeterminate structures using both flexibility and stiffness approaches, and computer applications to the analysis of framed structures.

01.245 Structural Analysis III 4 Q.H.

(Prereq. 01.143)

Continuation of 01.143, including slope-deflection, moment distribution, effects of axial loads, symmetry, antisymmetry, non-prismatic members. Approximate methods of lateral load analysis. Shear wall action.

01.259 Air Pollution 4 Q.H.

Theory and practice related to engineering management of air resources, microclimate and dispersion of pollutants; atmospheric chemistry, air pollution instrumentation, control of gaseous and particulate emissions, and design of air pollution control systems. Biological and chemical aspects of air pollution with emphasis on the toxicological aspects of the environment, physiological effects of aerosols, analysis of organic and inorganic constituents of the atmosphere, and rationale for establishment of air quality criteria and standards.

Mechanical Engineering

The course descriptions listed under Mechanical Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term.

02.116 Dynamics 4 Q.H.

(Not open to Mech. Eng. majors)

(Prereq. 01.140)

Kinematics and kinetics of particles and rigid bodies, including work and energy.

02.130 Thermodynamics I 4 Q.H.

Thermodynamics is the study of the concepts of energy and energy interactions between material systems through the basic laws of thermodynamics. The concepts of energy are discussed, and the first law for the conservation of energy is set forth. A system is described, and its thermodynamic state defined in terms of properties of substances. An energy analysis of various thermodynamics systems is presented in terms of entropy and the second law. Some consequences of the second law are discussed.

02.131 Thermodynamics II 4 Q.H.

(Prereq. 02.130)

The general thermodynamic relationships between properties of a substance are developed. The equation of state is discussed for liquids, gases, and magnetic substances. The characteristics of power and refrigeration systems are presented. The thermodynamics of nonreacting mixtures of gases, liquids, and solids are set forth, including the development of the chemical potential and phase relationships. Reacting mixtures are studied and the conditions for chemical equilibrium outlined.

02.132 Introduction to Combustion 4 Q.H.

(Prereq. 02.130)

The basic knowledge necessary to understand combustion phenomena and its application to selected combustion problems. Fundamental principles of thermochemistry, kinetics of chemical reactions, and transport properties of gases are explored. The conservation equations for reacting mixtures are discussed. Theories of the combustion of liquid droplets, laminar diffusion flames, and premixed laminar flames are presented.

02.134 Direct Energy Conversion 4 Q.H.

(Prereq. 02.130)

Direct energy conversion is concerned with means for converting heat directly into electrical energy. Included among the devices which accomplish this are magnetohydrodynamic power generators, thermionic emission converters, and fuel cells. The operating principles of these engines are presented, and performance calculations are made. A unified theory of energy conversion is discussed based upon the concepts of irreversible thermodynamics.

02.145 Design Fundamentals 4 Q.H.

(Prereq. 02.167)

Engineering design analysis of dynamically loaded machine elements. Stress concentration, contact and impact stressed, thorough treatment of fatigue factors in design (combined loading and statistical considerations). Environmental factors in design, creep, temperature and atmosphere.

02.146 Mechanical Engineering Design 4 Q.H.

(Prereq. 02.145)

Project using system approach, which involves all aspects of mechanical engineering: mechanics, thermodynamics, heat transfer, etc. This course is intended to provide students an opportunity to correlate previous courses in optimal design of various mechanical systems. Problem areas investigated may include friction and power transmission devices, hydraulic systems, etc.

02.147 Engineering Design 4 Q.H.

(Prereq. 02.167)

Intended for students who take only one course in design. Topics covered are stress concentration, fatigue and impact loading, lubrication, friction, and power transmission devices and their optimum design.

02.148 Design and Analysis 4 Q.H.

(Prereq. 02.146; open to all seniors.)

An interdisciplinary course. Project either analytical or experimental supervised by an interdisciplinary faculty member. Examples of project subjects: trash disposal, underwater search and rescue.

02.149 Engineering Analysis 4 Q.H.

(Prereq. 02.168)

Numerical and experimental methods in stress analysis. Analytical techniques include an introduction to the finite element method. Experimental methods include strain gauge techniques and photoelasticity among others.

02.150 Heat Transfer I 4 Q.H.

(Prereq. 02.130)

Modes of heat transfer: steady state and transient conduction, one and two dimensions; exact, numerical, and graphical techniques; electrical analogy; natural and forced convection, laminar and turbulent; radiation; change of phase heat transfer; condensation and boiling; heat exchangers.

02.155 Fluid Mechanics I 4 Q.H.

(Prereq. 02.130, 02.166)

An introduction to the concepts of fluid mechanics: fluid statics, including pressure

distribution and forces on submerged surfaces; differential and integral formulations of conservation of mass, momentum, and energy with emphasis on control-volume applications; pipe flow with consideration of head loss, use of the Moody diagram, and analysis of pipe networks.

02.156 Fluid Mechanics II 4 Q.H.
(Prereq. 02.155)

Velocity potential and stream functions; circulation and Kelvin's theorem; two-dimensional, steady irrotational incompressible flow; Karman-Pohlhausen method applied to two-dimensional boundary layers.

02.157 Fluid Machinery 4 Q.H.
(Prereq. 02.155)

General principles of turbomachinery: definitions of efficiency and a discussion of the requirements for similitude; machine selection to suit particular applications. Both liquid and gas handling machines are examined, and performance limits imposed by cavitation and choking are considered.

02.163 Mechanics 4 Q.H.
(Open to Elect. Eng. majors)

The kinematics and kinetics of rigid bodies. Instantaneous equations of motion, work and energy, and impulse and momentum.

02.165 Mechanics I 4 Q.H.

The concept of vector representation of force and moment. Equivalent force systems. Centroids and centers of gravity, distributed forces. Equations of equilibrium; free body diagrams; applications to trusses, pin-connected frames and beams. Elementary concepts in friction.

02.166 Mechanics III 4 Q.H.
(Prereq. 02.165)

Kinematics; translating (and brief introduction to rotating) reference frames. Mass moments and products of inertia. Plane motion of rigid bodies. Instantaneous equations of motion.

02.167 Mechanics II 4 Q.H.
(Prereq. 02.165)

Concept of stress and strain; principal stresses; Mohr's circle, stress-strain diagrams. Moment of inertia of areas. Stress and deformation of simple members under axial and torsional loads. Stresses in symmetrical beam bending.

02.168 Mechanics IV 4 Q.H.
(Prereq. 02.167)

Bending deflection of beams by various methods. Energy method. Asymmetrical bending. Combined static loading under axial, bending, and torsional loads. Buckling of columns.

02.169 Intermediate Strength of Materials 4 Q.H.
(Prereq. 02.168)

Analysis of curved beams, rings, thick-walled pressure vessels. Introduction to plane elasticity problems using rectangular and polar coordinate systems.

02.171 Mechanical Vibrations 4 Q.H.
(Prereq. 02.166)

One-, two-, and multi-degrees of freedom systems using classical, energy, Laplace, mobility, matrix, and computer techniques.

02.172 System Analysis and Control 4 Q.H.
(Prereq. 02.166)

Theoretical background for analyzing and designing a linear control system. System modeling, linear approximations and their limitations, transfer functions, and block diagramming. Applications of the Laplace transform. Transient and frequency response. Stability, frequency domain, and root locus techniques.

02.174 Design for Space Applications 4 Q.H.
(Prereq. 02.166)

The course starts with an exploration of Keplerian motion and continues into transfer dynamics using Battin's solution. Optimization of transfer dynamics is studied with respect to our solar system. Mass optimization, boost and re-entry dynamics fill out the rest of the course. System design is used throughout the course.

02.176 Dynamics 2 Q.H.
(Prereq. 02.166)

Rotating reference frames. Work and energy concepts. Lagrange's equations. Impulse and momentum. Simple gyroscopic motion.

02.192 Measurements and Analysis 4 Q.H.*

Lecture subjects include design of experiments, instrumentation, measurement, data analysis, and report writing. The students apply the principles developed in class to a variety of laboratory experiments. Written reports are required.

02.193 Mechanical Engineering Laboratory 4 Q.H.*
(Prereq. 02.192)

Students research, design, and manage project experiments. These experiments are to be chosen in advance according to the interest of the individual or group or according to Departmental offerings for that quarter. A formal report will be required.

02.194 Mechanical Engineering Senior Project 4 Q.H.
(Prereq. 02.192)

A project may be of an analytical, design, or experimental nature. It must be approved by the faculty member under whom the student will work. A formal report must be submitted to the student's faculty supervisor at the end of the quarter.

02.196 Materials Science 5 Q.H.*

An introduction to materials science for engineers, emphasizing the structure-property-function relationship. Topics will include crystallography, structure of solids, imperfections in crystals, phase equilibrium, phase transformations, diffusion and physical properties. A laboratory is included in this course.

02.197 Mechanical Behavior of Materials 4 Q.H.
(Prereq. 02.196)

The study of the physical basis for the mechanical behavior of solid materials, including elasticity, plasticity, viscoelasticity, and fracture. Application will be made to structural alloys and polymers.

02.198 Materials Processing 4 Q.H.
(Prereq. 02.196)

A survey of the essential features and materials limitation of various methods for processing materials. Topics include: heat treatment (ferrous and non-ferrous alloys), casting, forming, joining and machining.

02.199 Materials Science 4 Q.H.

An introduction to materials science for engineers, emphasizing the structure-property-function relationship. Topics will include crystallography, structure of solids, imperfections of crystals, phase equilibrium, electrical properties of metals, semi-conductors, and junctions.

02.232 Engineering Materials 4 Q.H.
(Prereq. 02.196)

This course is concerned with the utilization of materials science in the application and selection of materials. Topics will include reactions with environment, i.e., kinetics, oxidation and corrosion, materials selection criteria, and materials engineering case studies dealing with materials selection and failure analysis.

02.233 Thermodynamics of Propulsion 4 Q.H.
(Prereq. 02.131)

Application of the physical principles of thermodynamics, fluid mechanics, and plasmas to predict the behavior of propulsion devices. Air-breathing engines and rocket engines are discussed in detail, with emphasis on realistic applications to demonstrate how physical laws both describe and limit the performance of particular devices. An introduction to plasmas is given. The fundamentals of electrical rocket propulsion are included.

02.236 Nuclear Engineering I 4 Q.H.*

Study of nuclear physics emphasizing atomic

and nuclear structure, radioactive decay, and nuclear reactions, with particular attention to fusion and fission. The course also examines health physics, nuclear instrumentation, and the production and uses of radioactive isotopes. A general comparison of thermal, fast, and broader reactor types is made prior to a discussion of neutron interactions and their slowing down. The four-factor formula and diffusion equation are developed and applied to one-group theory for bare and reflected thermal reactors. Flux shaping as well as energy production and distribution within the core are discussed.

02.237 Nuclear Engineering II 4 Q.H.
(Prereq. 02.236)

Development of two-group theory for thermal reactors and consideration of the physics and safety of fast reactors. Effect of reactivity change, either intentional or accidental, as well as changes due to temperature, fission product buildup, xenon buildup after shutdown, and fuel depletion discussed. Reactor design considerations involving the interrelationship of reactor physics, reactor engineering control, distribution of power, fuel cycle management.

02.258 Gas Dynamics 4 Q.H.
(Prereq. 02.155)

Application of the principles of fluid mechanics to compressible flows. Wave propagation and the concepts of sound speed and Mach number are discussed. The emphasis is on one-dimensional steady flows with an examination of the effects of area change, friction, and heat transfer, including a consideration of normal shock waves and the possibility of choking.

02.260 Heat and Mass Transfer 4 Q.H.
(Prereq. 02.150)

Heat exchanger design will be explored by both the logarithmic mean temperature difference (LMTD) and the effectiveness-NTU (number of transfer units) methods. This will be followed by a discussion of the radiant heat transfer, the nature of solar radiation and the design of a flat plate solar collector.

Electrical Engineering

The course descriptions listed under Electrical Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term.

03.101 Discrete Systems 4 Q.H.
(Prereq. 10.153)

Historical review and future perspectives of discrete systems; representation of digital signals, quantization; introduction to digital filters, moving average filters; Z-transforms, inverse Z-transforms; recursive digital filters, stability

considerations, steady-state and transient response; introduction to non-recursive techniques, the discrete Fourier transform, the fast Fourier transform; applications to computation of systems transfer functions.

*Lab fee required.

- 03.111 Circuits and Systems I** 4 Q.H.
(Prereq. 10.153, 11.205)
Circuit elements (linear, nonlinear, time-invariant, and time-varying), sources (independent and controlled), Kirchhoff's laws, Tellegen's theorem, Thevenin's theorem, network topology, mesh and nodal analysis.
- 03.112 Circuits and Systems II** 4 Q.H.
(Prereq. 03.111)
Linearity and time-invariance, system function, forced and force-free response of networks and L.T.I. systems, singularity response, partial fraction expansion, "Pre-box" concept, and convolution.
- 03.113 Circuits and Systems III** 4 Q.H.
(Prereq. 03.112)
Thevenin's theorem revisited, magnitude and phase plots, resonance, two-port networks, energy and power, and convolution.
- 03.119 Circuits and Systems A** 6 Q.H.
(Prereq. 10.152 and 11.205)
Includes the material covered in course 03.111, Circuits and Systems I, plus half of the material in course 03.112, Circuits and Systems II.
- 03.120 Circuits and Systems B** 6 Q.H.
(Prereq. 03.119)
Completes the material in 03.112, Circuits and Systems II, plus the material in course 03.113, Circuits and Systems III.
- 03.122 Circuits and Systems IV** 4 Q.H.
(Prereq. 03.113)
Basic concepts and techniques of linear system theory. Review of system theory in terms of the convolution integral; waveform representation in terms of the Fourier series, Fourier Integral, and the bilateral Laplace transform; system concepts in terms of the function and their application to filters and feedback systems.
- 03.131 E.E. Laboratory I-Measurements** 2 Q.H.*
(Prereq. 03.111)
Basic electrical measurements, report writing, use of standard laboratory instruments including digital voltmeters, oscilloscopes, and bridges.
- 03.132 E.E. Laboratory II-Circuits and Systems** 2 Q.H.*
(Prereq. 03.112)
Experiments relevant to the Circuits and Systems courses, together with more work in measurements.
- 03.133 E.E. Laboratory III-Devices** 2 Q.H.*
(Prereq. 03.141)
Introduction to the digital computer, electropitics, terminal characteristics of active devices.
- 03.134 E.E. Laboratory IV** 2 Q.H.*
(Prereq. 03.142, 03.161)
Logic circuits, design and testing of active circuits, microwaves studies, control systems, digital computation.

- 03.141 Electronics I** 4 Q.H.
(Prereq. 03.122)
This first course in electronics stresses the significance of nonlinear active devices in relation to the behavior of circuits and systems concerned with functions in the frequency domain. Linear models for diodes, and discrete and integrated-circuit active devices are developed to cope with the d-c characteristics and incremental gain and impedances of such devices. The concept of ideal amplification is modified to stress the limitations imposed upon bandwidth and gain by impedance levels, noise, parameter variation, and distortion encountered with current active devices. Consideration is given to cascaded stages, composite two-part, hybrid, and nonhybrid configurations.
- 03.142 Electronics II** 4 Q.H.
(Prereq. 03.141)
This course is a continuation of Electronics I. Consideration is given to various types of coupling for cascaded stages, with emphasis on the differential configuration as the heart of the generalized operational amplifiers emphasizes the concept of loop gain and its influence on gain, impedance levels, bandwidth, and stability. Consideration is given to both desirable and undesirable stability concepts. The discussion of frequency translation includes AM, FM, and PM systems. Frequency selective amplifiers are considered on the basis of LC-tuned circuits and active filters.
- 03.144 Electronics III** 4 Q.H.
(Prereq. 03.142)
This course is a continuation of Electronics II. Operational amplifiers are introduced with consideration given to their operation, limitations, and applications. Applications include linear functions in the frequency domain and analog arithmetic operations. Digital circuits are related to the basic structure of digital computers. Consideration is given to the fundamental operation of active devices, bipolar, J-FET's and MOS-FET's as switches, digit gates, function generators, pulse and delay circuits, and memories. These fundamental operations are related to current integrated circuits, including MSI and LSI.
- 03.151 E.E. Laboratory I-A** 1 Q.H.*
(Prereq. 11.205)
Basic electrical measurements, report writing, use of laboratory instruments, including digital voltmeters, oscilloscopes, and bridges.
- 03.152 E.E. Laboratory I-B** 1 Q.H.*
(Prereq. 03.151)
A continuation of 03.151, E.E. Laboratory I-A.
- 03.153 E.E. Laboratory II-A** 1 Q.H.*
(Prereq. 03.152)
Experiments in conjunction with courses 03.111 and 03.112, Circuits and Systems I and II. Additional experiments in measurements.

03.154 E.E. Laboratory II-B 1 Q.H.*
(Prereq. 03.153)

Continuation of 03.153 in conjunction with courses 03.113 and 03.122, Circuits and Systems III and IV.

03.155 E.E. Laboratory III-A 1 Q.H.*
(Prereq. 03.154)

Introduction to the digital computer and logic circuits, as well as experiments tied in with 03.141 and 03.142, Electronics I and II.

03.156 E.E. Laboratory III-B 1 Q.H.*
(Prereq. 03.155)

Continuation of 03.155 with some experiments relevant to 03.161 and 03.162, Field Theory I and II.

03.161 Electromagnetic Field Theory I 4 Q.H.
(Prereq. 10.156)

Definition and representation of scalar and vector fields. Coordinate systems; elements of vector calculus; definition of the concepts of gradient, divergence, curl, and the "del" operator; free-space electrostatics; definition of the electric field intensity; the scalar potential; solution to Poisson and Laplace equations; macroscopic model of dielectric materials; the electric polarization and the electric flux density vector; boundary conditions; Lorentz force; free space magnetostatics; magnetic vector potential and solution to the "vector" Poisson equation; macroscopic model of magnetic materials; magnetization and magnetic field intensity; boundary conditions.

03.162 Electromagnetic Field Theory II 4 Q.H.
(Prereq. 03.161)

Generalization of the Maxwell equations to the case of time-varying fields; Faraday induction law; wave equations and the plane wave solution; Poynting theorem and the concept of energy stored by the fields; reflection and refraction of plane waves; time-harmonic wave equations for the scalar and vector potentials; time-harmonic form of retarded potentials; radiation from dipole; motion of charged particles in fields; magnetoionic media; elementary discussion of plasma physics and M.H.D.

03.175 Electromechanical Dynamics 4 Q.H.
(Prereq. 03.113, 03.161)

Review of Maxwell's equations and quasistatic approximations, electric and magnetic energy concepts, state-variable formulation of electromechanical coupling. Applications to elementary energy conversion devices, singly and doubly excited magnetic devices with mechanical, translational, and rotational elements. Generalized rotating electromechanical energy converters, circuit-model concepts, applications to selected extant rotating machines, i.e., commutator machines and a-c machines; dynamic response to various stimuli.

03.176 Machines and Systems 4 Q.H.
(Prereq. 03.177)

A detailed investigation of the operating principles of synchronous machines, synchronous motor and generator power-angle characteristics, machine dynamics, machine and power system stability.

03.177 Introduction to Electric Machinery 4 Q.H.
(Prereq. 03.161)

Review of magnetic field, energy, and energy conversion concepts. Transformers and their circuit representations; application of energy conversion concepts to basic rotating machines and exploration of the Theory of Induction, synchronous, and d-c machines. Limitations in actual machines will be discussed.

03.178 Transients in Electric Power Systems 4 Q.H.

Introduction to the response of various elements of a power network to the transients caused by lightning, switching, and faults. Some of the equipment to be considered in terms of transient response include the transmission line, lightning arresters, fuses, transformers, and circuit breakers.

03.183 Electrical Engineering I 4 Q.H.
(Not open to Elect. Eng. majors) (Prereq. 10.152)

Introductory course to electric circuit theory covering Kirchhoff's laws, loop and nodal analysis, Thevenin's theorem, power and energy, exponential excitation and the system function.

03.184 Electrical Engineering II 4 Q.H.
(Not open to Elect. Eng. majors) (Prereq. 03.183)

Properties and analysis of electronic devices, circuits, and systems; elements of control systems; principles of energy conversion. Emphasis on each topic determined according to major discipline.

03.185 Power System and Controls 4 Q.H.
(Prereq. 03.183)

Basic concepts of electromechanical energy conversion stressing the terminal characteristics and operation of d-c and a-c machines, elements of power distribution systems, and concepts of feedback control, with application to power systems and plant control.

03.186 Basic Electrical Instrumentation 4 Q.H.*
(Prereq. 03.183)

Basic electrical measurement devices including ammeters, voltmeters, oscilloscopes, and bridges; instrumentation techniques such as direct measurement, comparative measurement, and analog methods. Application to nonelectrical disciplines is included.

03.187 Modelling Techniques 4 Q.H.
(Prereq. 03.183 and 03.184; also FORTRAN IV programming.)

Introduction to the concept of modelling techniques to represent physical, biological, and social

systems; electrical analogs and use of analog computers; introduction to digital modelling and the use of digital computation.

03.191 Introduction to Digital Computers I: Design and Organization 4 Q.H.
(Prereq. 03.141)

Introduction to the basic components of the general organization of a stored-program digital computer; number systems and base conversions, machine presentation of binary numbers and characters, coding and flow charting; non-machine arithmetic in different bases, machine arithmetic in binary; storage of data sets and data flow within computing systems; hybrid computation; decision tables, definition and properties of Boolean algebra, logic expression minimizations, analysis and synthesis in combinatorial logic; computer elements, microoperation, sequences; organization of commercially available stored-program computer; a large-scale batch-processing system.

03.192 Introduction to Digital Computers II: Fundamentals of Computation Structures 4 Q.H.
(Prereq. 03.191)

Formal forms of Boolean expressions; NAND/NOR and other two-level implementations (integrated circuit viewpoint); arithmetic and logic of speed-up techniques; analysis and synthesis of sequential switching logic circuits, pulse-mode and level-mode sequential logic; memory structures, trends in memory system organization and speed capacity trade-offs, addressing techniques and storage allocations; "atoms," "molecules," logic design and physical realization of the functional building blocks of automatic digital machines.

03.200 Special Topics 4 Q.H.
(Prereq. Permission of Department)
Topics covered will vary from term to term depending on the interests of the Department and the students.

03.218 Control System Theory 4 Q.H.
(Prereq. 03.142)

Control system concepts; goals and basic components. Review of time and frequency domain techniques. Classical control system theory; error analysis for different systems. Analyses of second- and third-order systems. Stability and relative stability using root locus and Nyquist diagrams. The Nichols chart. Compensation, application of computer technology to control systems analysis and design. State-variable description of dynamic systems. The state equations and the fundamental analog realization of the standard equations. Solution of the state equations. Properties of the state-transition matrix. Optimal systems. Introduction to sampled data systems. The Z-transform as an analog to the Laplace transform.

03.221 Electric Power Systems I 4 Q.H.
(Prereq. 03.113)

This course, together with 03.222 Electric Power Systems II, is designed to give a broad view of the structure of those electric systems having the primary function of energy transfer and especially those which function to transfer large quantities of energy. The functions of the various system elements are described and their significant characteristics are investigated briefly. The interrelation between elements is treated.

03.222 Electric Power Systems II 4 Q.H.
(Prereq. 03.221)

A continuation of Electric Power Systems I. Problems such as voltage control, protection, economics, and planning which relate to the system as a whole. Taken with the previous course, it may provide a general background for more intensive studies of electric power systems.

NOTE: A student may take both electives in sequence or may take the first course only.

03.233 E.E. Power Laboratory I 2 Q.H.*

Experimental work with polyphase power equipment, power measurements, polyphase power rectification, steady-state and dynamic operation modes of polyphase induction motors, power transformers and symmetrical component analysis of unbalanced loading of transformers, analog computer.

03.234 E.E. Power Laboratory II 2 Q.H.*
(Prereq. 03.246)

Experimental work with rotating machinery and systems; steady-state and dynamic modes of operation of the commutator and synchronous machines; system study involving synchronous machines; selected experiments in control systems; network analyzer studies.

03.237 Senior Project Laboratory I 2 Q.H.*
(Prereq. 03.142, 03.162)

In this course students work with a faculty adviser on some term project, either experimental or theoretical.

03.238 Senior Project Laboratory II 2 Q.H.*
(Prereq. 03.142, 03.162)

This course may be a continuation of the project started in 03.237 or it may be a new project. Again, the student works closely with a faculty adviser.

03.241 Selected Topics in Electronics 4 Q.H.
(Prereq. 03.142)

This course concerns 1) the description and application of those electronic devices (e.g., thyristors, photodiodes, etc.) not covered in depth in the regular electronics sequence; 2) electronic subsystems (e.g., AFC, shift registers, etc.); and 3) systems (e.g., navigation systems, telephone switching systems, etc.). Most of the presentations are made by students on topics of

their choice, but there are also lectures by the instructor as well as by invited speakers.

03.242 Theory and Technology of Semiconductor Devices I 4 Q.H.*
(Prereq. 02.196)

This course comprises a closely coupled lecture and laboratory series. Topics covered include technology and physics of the planar diffusion process, electronic properties of homogeneous semiconductors, inhomogeneities and junctions (Fermi potential diagrams, equilibrium at an abrupt discontinuity, and the behavior of a junction under applied bias), and the junction transistor.

03.243 Theory and Technology of Semiconductor Devices II 4 Q.H.*
(Prereq. 03.242)

This course is a continuation of 03.242. Material covered includes introduction to unipolar transistor action, introduction to surface effects, the MOS-FET, and a discussion of noise problems encountered in semiconductor devices.

03.245 E.E. Power Laboratory A 1 Q.H.*

03.246 E.E. Power Laboratory B 1 Q.H.*

03.251 Communication Theory 4 Q.H.
(Prereq. 03.122)

Signal analysis including signal classes, Fourier methods, correlation functions, amplitude density, and power spectra, amplitude modulation, Hilbert transform applications, analytic signal and complex envelope.

03.252 Fundamentals of Communication Systems 4 Q.H.
(Prereq. 03.251)

Frequency modulation, signal-to-noise ratios in AM and FM, multiplexing, sampling theory, pulse modulation systems, data transmission, signal space. Correlation detection, probability, random variables and random processes, information theory and coding.

03.261 Wave Transmission and Reception 4 Q.H.
(Prereq. 09.108, 03.161)

Analysis of radiation, transmission, and reception of electromagnetic and acoustic waves using graphical and digital computer techniques. Design of distributed systems, antennas, microphones, loudspeakers, and sonar transducers.

03.262 Advanced Topics in Electromagnetic Field Theory 4 Q.H.
(Prereq. 03.162)

This course is a continuation of the required courses in field theory. Topics covered include microwave and waveguide structures, careful development of electromagnetic energy and force concepts, and an introduction to radiation and antenna theory.

03.281 Machine Language and Assembly Language Programming 4 Q.H.
(Prereq. 03.191)

Study of the machine and assembly languages of a selected digital computer. Machine representation of numbers, characters, and instructions. Machine language programming; flow of control, relocatability, input/output instructions, addressing, and instruction modification. Symbolic assembly language; macros, literals, and pseudo-instructions. Several programming projects will be an integral part of the course.

03.282 Programming Systems 4 Q.H.
(Prereq. 03.281)

Continuation of 03.281. Assemblers, searching and sorting techniques, macro-processors; loaders. High-level languages and an introduction to their compilation. Introduction to operating systems. Programming projects will be an integral part of the course.

03.285 Applied Discrete Analysis 4 Q.H.
(Prereq. 10.156)

Introduction to elementary number theory, modern algebra, combinatorial mathematics and discrete probability theory, including such topics as prime numbers, least common multiple, greatest common divisor, Euclid's algorithm, continued fractions, congruences, groups, rings, fields, Boolean algebra, combinations and permutations, generating functions, random variables and Markov chains. The material in this course is widely applicable to the field of computer science.

03.292 Mathematical Techniques in Electrical Engineering I 4 Q.H.
(Prereq. 10.155 or equiv.)

Definition and representation of a complex variable and of functions of a complex variable. Topics covered are conformal mapping, singularities, Laurent series, residues, and contour integration. Applications of complex variable theory to Fourier theory, Hilbert transforms, conformal transformations in the analysis of linear systems and in electrostatics.

03.293 Mathematical Techniques in Electrical Engineering II 4 Q.H.
(Prereq. 10.155 or equiv.)

Matrix notation and development of matrix algebra. The solubility of sets of linear equations; determinants, linear transformations, invariance, quadratic forms and eigenvalues. Illustrative applications of matrix techniques for the formulation and solution of problems drawn from the realm of circuit theory, probability theory, and engineering physics.

03.295 Numerical Methods and Computer**Applications**

4 Q.H.

(Prereq. 09.108, 03.122)

Presentation of numerical techniques used in solving scientific and engineering problems with the aid of digital computers. Topics covered include modeling and simulating of deterministic and probabilistic systems, theory of interpolation, iteration methods, numerical solution of ordinary and partial differential equations, signal detection, and using libraries of scientific subroutines. Representative problems are chosen for solution on a digital computer.

03.296 Digital Techniques

4 Q.H.

(Prereq. 03.142, 03.191)

The characterization of devices, circuits and integrated structures encountered in digital systems, digital data transmission, error rates and systems parameters, synchronous-asynchronous information—processing techniques related to bulk and surface storage media. Digital system reliability, failure rates, redundancy techniques. Computer-aided design, testing digital systems, timing considerations in digital systems.

Chemical Engineering

The course descriptions listed under Chemical Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term. In addition to meeting course prerequisites, students are expected to take each chemical engineering course in the sequence shown on the specimen program sheet.

04.101 Chemical Engineering Calculations I

(Prereq. 12.115)

4 Q.H.*

Application of fundamental laws of mass and energy conservation to chemical and physical processes. In this course the primary emphasis is on material balances. A computational laboratory is included to aid students in improving facility in handling problems typical of the course.

04.102 Chemical Engineering Calculations II

(Prereq. 04.101)

4 Q.H.

Emphasis is on energy balances and the simultaneous application of mass and energy conservation laws. Problems selected from those typical of the chemical processing industries are considered.

04.106 Polymer Science and Engineering

(Prereq. 12.147)

4 Q.H.

This course provides instruction in the nature of polymeric materials and their importance to the chemical industries and everyday life. Topics include polymer classification, composition, and structure; polymer synthesis, including the chemistry of step-reaction and chain polymerization, and addition copolymerization.

04.111 Chemical Engineering I

(Prereq. 04.102)

4 Q.H.

The important unit operations of chemical engineering: fluid mechanics, heat transfer, and evaporation.

04.112 Chemical Engineering II

(Prereq. 04.111)

4 Q.H.

Continuation of 04.111 to mass transfer unit operations: distillation and gas absorption.

04.121 Transport Phenomena I

(Prereq. 04.111)

4 Q.H.

The mechanisms of momentum transport in fluid

phenomena are described. Velocity distributions for Newtonian fluids in the laminar and turbulent flow regimes are derived and utilized in the analysis of elementary fluid flow problems.

04.122 Transport Phenomena II

4 Q.H.

(Prereq. 04.121 and 04.112)

Mass and heat transport by the mechanisms of molecular and bulk motion are described. A variety of elementary physical and chemical transport problems are analyzed in terms of these mechanisms.

04.123 Experimental Methods I

4 Q.H.*

(Prereq. 04.112)

Experimental approach to solving chemical engineering problems and preparing reports to detail the results and their interpretations. Experiments illustrating the fundamental unit operations are performed.

04.124 Experimental Methods II

4 Q.H.*

(Prereq. 04.123)

A continuation of 04.123, requiring more advanced experimentation and more sophisticated reports.

04.126 Chemical Engineering Thermodynamics

(Prereq. 04.102, 12.161)

4 Q.H.

The first law and its application to batch and flow systems, heat effects in chemical and physical processes, thermodynamic properties; the second law, entropy, physical and chemical equilibria; emphasis on the fundamental principles and mathematical relationships and their application to the analysis and solution of a variety of engineering problems.

04.131 Process Design I

6 Q.H.*

(Prereq. 04.122, 04.126)

The design of a chemical plant, including process selection, material and energy balances,

designs of processing units, instrumentation, flowsheets, and cost estimates for procuring, erecting, and operating the plant.

04.132 Process Design II 6 Q.H.*
(Prereq. 04.131)

The design of chemical plants is extended to include complex chemical processes, optimization, start-up procedures, and scaling techniques.

04.133 Projects I 6 Q.H.*

(Prereq. Senior standing and consent of Dept.) Individual research related to some phase of chemical engineering. Open only to students selected by the department head on the basis of scholarship and proven ability.

04.134 Projects II 6 Q.H.*
(Prereq. 04.133)

A continuation of the research work undertaken in 04.133.

04.135 Principles of Nuclear Engineering 4 Q.H.
(Prereq. Senior standing)

An introduction to the principles of nuclear engineering. Elements of nuclear physics, reactor physics, and radiation safety are presented together with engineering techniques specific to the nuclear industry.

04.136 Chemical Engineering Kinetics 4 Q.H.
(Prereq. 12.162, 04.126)

Fundamental theories of the rate of chemical change in homogeneous reacting systems; integral and differential analysis of kinetic data; design of batch and continuous-flow chemical reactors; introduction to heterogeneous reactions and reactor design.

04.137 Mathematical Methods in Chemical Engineering 4 Q.H.

(Prereq. Senior standing)

Formulation and solution of problems taken from chemical and engineering studies, which require advanced mathematical methods. Emphasis is placed primarily on the formulation step. However, numeric and analytic solution techniques for solving sets of algebraic equations and for solving ordinary and partial differential equations are discussed.

04.138 Chemical Process Control 4 Q.H.
(Prereq. 10.155 and permission or senior standing)

Introduction to the principles of automatic control systems. Emphasis on modeling, stability, and design of linear feedback systems for control of temperature, liquid level, and composition.

04.142 Introduction to Optimization 4 Q.H.
(Prereq. Senior standing)

Elementary optimization techniques, such as gradient methods, pattern search, linear programming, and dynamic programming, are described and applied to a variety of elementary physical and chemical problems.

04.143 Special Topics 4 Q.H.

(Prereq. Senior standing)

Chemical engineering topics of interest to the staff member conducting the class are presented for study.

04.144 Chemical Energy Economics 4 Q.H.

(Prereq. Senior standing)

Financial decision-making techniques are introduced and applied to the problems of production, transportation, and utilization of chemical energy resources such as petroleum, natural gas, coal, and shale oil.

04.145 Mass Transfer Operations 4 Q.H.

(Prereq. Senior standing)

Calculation and design methods used in processes involving mass transfer. Topics covered include vapor-liquid equilibria for binary and multicomponent systems, multicomponent distillation, absorption, and extraction.

04.147 Analysis of Chemical Processes 4 Q.H.

(Prereq. 04.126, 04.136 and senior standing)

Methods and reactions used for making chemical products on a large scale. Topics covered include types of physical and chemical equilibria, flow sheet patterns, energy management, and catalytic and noncatalytic rate problems. A number of situations involving simultaneous application of the above topics in process analyses are studied.

04.148 Management in the Chemical Industries

(Prereq. Senior standing in engineering) 4 Q.H.

Principles of management as applied to the chemical process industries. Case studies are used to supplement lectures and discussions.

04.149 Kinetics of Polymerization Process 4 Q.H.

(Prereq. 04.136, 12.148 and senior standing)

The mechanisms by which polymeric materials are assembled via chemical reaction. Reaction rate models based on these mechanisms are utilized to investigate the effect of reaction parameters on the chemical and physical structure of the polymeric product. The specific polymerization processes considered are free radical addition, condensation, and ionic.

04.152 Pollution Control in Chemical Industries

(Prereq. Senior standing) 4 Q.H.

Students are instructed in the fundamentals of handling environmental problems in the chemical process industries. Water quality requirements and industrial waste characteristics are discussed.

04.154 Chemical Process Development 4 Q.H.

(Prereq. Senior standing)

A study of the manner in which a chemical process evolves from the research laboratory to full-scale production. Typical processes are used as illustrations. Topics covered include economic factors, safety factors, batch vs. continuous operation, process evaluation, developing the flow sheet, and scale-up considerations.

*Lab fee required.

04.155 Corrosion Engineering

4 Q.H.

(Prereq. Senior standing)

Covers the fundamentals of corrosion engineering: theories of corrosion, corrosion testing, corrosion protection, and selected relevant topics.

04.181 Nuclear Technology

4 Q.H.

(Prereq. 10.422, 11.319 BET only)

Atomic and nuclear structure, nature of radioactivity, radiological safety, use of nuclear instrumentation, elements of nuclear reactors.

Industrial Engineering

The course descriptions listed under Industrial Engineering are intended to show the general scope of the subject that will be covered. Since courses are continuously updated, specific topics or methods of approach may vary from term to term.

05.127 Concepts and Applications of Work Design

4 Q.H.

(Not open to Industrial Eng. majors)

Methods design concepts and graphic aids for analysis, including process, multiple activity, and operations charts; work measurement techniques, including stop-watch time study, work sampling, and predetermined time systems. Analysis methods are illustrated with examples drawn from production processes and service industries. The course is structured to assist students in developing the ability to identify and solve minor problems and to assess the need for and quality of outside expert assistance.

05.128 Work Design

4 Q.H.*

Principles of work physiology. Workplace design from the standpoint of employee safety and effectiveness. Work measurement techniques, including direct measurement, synthetic standards, and work sampling.

05.130 Systems I

4 Q.H.

(Prereq. 10.154)

Linear feedback systems and solutions of first-order systems. Integral and derivative control. Laplace transforms for continuous systems analysis and Z-transforms in discrete systems. Transfer functions.

05.131 Systems II

4 Q.H.

Analysis and design of major industrial engineering systems. Students are expected to undertake up to five projects drawn from line balancing, job shop scheduling, stochastic network analysis, reliability in design, complex queuing system design, sequencing, or other areas as appropriate to student and faculty interest.

05.145 Probabilistic Analysis for Engineers

(Prereq. Integral & Differential Calculus) 4 Q.H.

Probability theory presented axiomatically, with emphasis on sample space representation of continuous and discrete random variables. Material will cover standard distributions, i.e., normal, gamma, exponential, poisson, binomial, and others. Topics include expectation, transform techniques, and change of variable.

05.147 Statistics I

4 Q.H.

(Prereq. 10.208)

Definition of a statistic; distributions of random variables including normal, t, chi-square, F, poisson, binomial; estimation of parameters-point estimation by method of moments, maximum likelihood, and Bayes estimates.

05.148 Statistics II

4 Q.H.

(Prereq. 05.147)

Interval estimation, stating and testing hypotheses, linear regression, analysis of variance, applied topics such as reliability, quality control, decision theory from Bayes rule.

05.149 Reliability and Quality Control

4 Q.H.*

(Prereq. 05.147)

Applied probability and statistical inference techniques are utilized in reliability analysis and quality control. Both theory and application are discussed in relation to the total quality assurance program.

05.150 Industrial Cost Control

4 Q.H.

Fundamental concepts of accounting, with emphasis on using financial records to make engineering decisions. Study of financial statements of a firm. Contrast in usefulness of data from absorption costing vs. direct costing. Interpretation of variance accounts.

05.160 Material Handling System Design

4 Q.H.

Study of major material handling systems. Material handling systems integration. Equipment selection. Design and analysis of automated systems in manufacturing, warehousing, and distribution. Automated identification systems design.

05.161 Operations Research I

4 Q.H.

(Prereq. 10.154)

Deterministic models, including L.P. and duality, transportation and allocation, sensitivity and post-optimality analyses. Network analysis including maximal flow, shortest route, and PERT; dynamic programming and recursive functional expressions; game theory.

05.163 Operations Research II

4 Q.H.

(Prereq. 05.147)

Stochastic models in O.R.; their analytical development and solution. Topics covered:

queuing, models, deterministic and stochastic inventory models, Markov chains, sequencing.

05.165 Production and Inventory Control 4 Q.H.
(Prereq. 05.145 or equiv.)

Basic inventory models and inventory management systems. Single-stage and multi-stage systems and their dynamics. Production control and aggregate planning. Mathematical and heuristic approaches to aggregate scheduling. Cost structure and decision oriented analyses. Consideration of job-shop scheduling and dispatching problems.

05.166 Facilities Design 4 Q.H.*

Application of quantitative techniques, such as queuing theory and engineering economy, to problems involving facilities planning and materials handling. Basic graphical tools, models for plant layout, and laboratory projects.

05.170 Human Considerations in Engineering Design 4 Q.H.

An introductory human factors course with emphasis upon the physiological and anthropometric bases of equipment and workplace design. Topics include: 1) thermal regulation and heat stress; 2) work and fatigue; 3) acceleration and whole body vibration stress; 4) ambient noise and auditory system damage; 5) body measurements and equipment design. As feasible, theory is related to student experiments.

05.171 Human Factors 4 Q.H.

Introductory course with emphasis upon human sensory/motor performance and information processing capabilities. Includes application to the design and performance of man/machine systems. Topics include: 1) function and performance of the visual and auditory senses; 2) concepts of information theory and signal detection theory; 3) cognitive channel capacity and selective attention. The course is built around a series of experiments which explore theories of human performance in skilled task execution.

05.186 People in Organizations 4 Q.H.

(Prereq. Seniors only)

The individual in the work environment. Work theory, motivation, and interpersonal relations based on the concepts of the behavioral sciences; structure and dynamics of organizations; problems of innovation; case studies for situational analysis to assist students who wish to develop skill in applying behavioral concepts.

05.201 Principles of Computation and Programming I 4 Q.H.

(Prereq. FORTRAN)

Review of algorithms, computers, and programming at the FORTRAN level. Machine language programming (instruction, execution, and addressing techniques). Coding and representation of data and structure. Subroutines, input-output, and simultaneous operations. Assemblers and loaders. Introduction to list structures

and data organization. Program debugging and verification. Survey of machines, devices, and languages.

05.202 Data Structures 4 Q.H.

(Prereq. Knowledge of PASCAL)

Introduction to data structures and their applications. The course covers elementary data structures including scalars, integers, reals, characters, records, arrays, stacks, queues, lists, and trees. Application areas include scheduling, data bases, and information retrieval. Students will program in a high-level data, structure-oriented language such as PASCAL.

05.240 Digital Simulation Techniques 4 Q.H.

(Prereq. FORTRAN, 05.147, or 05.245)

Design and construction of digital, discrete simulation models. Extensive use of FORTRAN and special simulation languages. Discussion of model logic and specification, testing, validation, and use. Several simulation projects using the Northeastern computer facilities.

05.241 Management Information Systems 4 Q.H.

Managerial applications of digital computers. The use of computers in information, decision-control systems. Information-based theories of management. Survey of information technology. Computer system basics. Cost and value of information. System design, analysis, equipment selection. Organizational implications.

05.242 Data-Base Management 4 Q.H.

(Prereq. One year of a high-level language.)

Introduction to data-base systems and their rise in corporations. Review of basic data storage concepts. Evolution and growth of data-base. Creating and managing data organization file using hashing, threaded lists, tree structures. Distributed data-bases. Data-base software, directory maintenance, tapes of data-base languages, query languages. Data-base management systems. Management considerations, including security, privacy, and information quality.

05.245 Basic Engineering Statistics 4 Q.H.

(Not open to Industrial Eng. majors)

Introduction to basic probability distributions, including the binomial and hypergeometric, exponential, poisson, and normal; laboratory data analysis; statistical test of hypotheses about central tendency and variability; curve fitting with least squares on engineering data.

05.260 Engineering Economy 4 Q.H.

(Not open to Industrial Eng. majors)

The formulation of analytical techniques, i.e., rate of return, present worth, and annual cost. The application of these techniques to solve business and engineering problems involving design, selection, replacement, lease-buy decisions, and decisions between multiple alternatives. Sensitivity analysis and basic probabili-

*Lab fee required.

ty are introduced in cases where uncertainty exists. Brief survey of sources and costs of capital, debt-versus-equity financing, and leverage.

05.261 Engineering Economy and Statistical Decision Theory 4 Q.H.
(Prereq. 05.145 or 10.208)

The objective of the course is to familiarize the students with the theory and techniques of economic evaluation of an investment project. Introductory steps in the analysis of investment proposals, time value of money, and cash flows; analysis of deterministic and stochastic cash flows in terms of present worth, annual cost, rate of return, and benefit/cost ratio. Decision tree for sequential decisions, criteria for decision making under uncertainty, utility theory, value of information, effect of accounting procedures and taxes on investment analysis. Case studies involving replacement, lease, engineering design, and public projects.

05.290 Independent Study in Industrial Engineering 1—4 Q.H.

For students usually in the senior year with high scholastic standing on advanced I.E. topics. Projects may be of an applied or theoretical nature; formal report submitted to student's project supervisor at the end of quarter.

Engineering Technology

Mechanical Engineering Technology

02.411 Mechanics A 4 Q.H.
(Prereq. 10.320, 11.317)

Forces, moments, couples, statics of particles and rigid bodies in two and three dimensions. Distributed forces: external and internal. First moments and centroids. Analysis of structures: trusses, frames and machines.

02.412 Mechanics B 4 Q.H.
(Prereq. 02.411)

Friction, second moments and virtual work. Kinematics of particles: rectilinear and curvilinear motion of dynamic particles. Force, mass and acceleration, work and energy.

02.413 Mechanics C 4 Q.H.
(Prereq. 02.412)

Impulse and momentum of particles. Kinematics and dynamics of rigid bodies: force, mass, and acceleration. Dynamics of rigid bodies: work and energy, impulse and momentum. Introduction to mechanical vibration.

02.414 Stress Analysis A 4 Q.H.
(Prereq. 02.411)

Stress and deformation, mechanical properties of materials, allowable stresses and factors of safety, axially loaded indeterminate members, effects of temperature on stresses and strains, thin cylinders and spheres. Riveted and welded

05.291 Special Project in Computer Science
(Prereq. Students in Comp. Science only) 4 Q.H.
Based upon a student-generated project proposal, students are assigned to appropriate faculty members for developing and completing a computer science project. The nature of the project will reflect the interest and experience of the student.

05.295 Seminar in Computer Science 4 Q.H.
(Prereq. Senior Comp. Science majors or instructor's permission)

Acts as a "cap stone" course for Computer Science majors. Meetings are held once or twice per week and a current topic or problem in computer science is presented by an expert in the subject matter. Students are assigned additional questions and/or problems to research in the topic area as an aid to their developing a deeper appreciation and understanding of various aspects of computer science.

joints. Shear and bending moment in beams, stresses in beams, design of beams, curvature of beams.

02.415 Stress Analysis B 4 Q.H.
(Prereq. 02.414)

Determinate and indeterminate beam deflections and reactions by numerical and graphical integration and area moment methods; theorem of three moments. Torsional stresses and strains; power transmission; eccentric loads on struts, beams, riveted and welded joints; combined and principle stresses; Mohr's circle; theories of failure.

02.416 Stress Analysis C 4 Q.H.
(Prereq. 02.415)

Curved beam, asymmetrical bending of beams, short-center and shear stresses on thin sections, composite beams. Columns, energy absorption and resilience, inertial stresses, impact loading, deflection of beams by energy methods. Bolted fastenings.

02.417 Mechanical Design A 4 Q.H.
(Prereq. 02.415)

Failure criteria; properties and selection of materials, manufacturing considerations; stress concentrations, strength under combined stresses; theories of failure; impact, fluctuating,

and repeated loads. Stresses, deformation and design of springs; screws, keys, pins and interference fits; preloading bolted joints; shafts and flywheels; friction brakes.

02.418 Mechanical Design B 2 Q.H.
(Prereq. 02.417)

Lubrication and journal bearings; antifriction bearings; stresses and power transmission of spur, bevel, and worm gear; screws for power transmission.

02.419 Mechanics 4 Q.H.
(Prereq. 10.420, 11.417)

Kinematics of particles: rectilinear and curvilinear motion of dynamic particles. Force, mass and acceleration, work and energy. Impulse and momentum of particles. Kinematics and dynamics of rigid bodies: force, mass, and acceleration. Dynamics of rigid bodies: work and energy, impulse and momentum.

02.421 Thermodynamics A 4 Q.H.
(Prereq. 11.418)

General theory of heat and matter, laws of thermodynamics, energy-transformation principles; availability of energy; properties and processes for pure substances and ideal gases. Thermodynamic properties and processes of liquids and vapors; tables and charts; mixtures of fluids, vapor cycles.

02.422 Thermodynamics B 4 Q.H.
(Prereq. 02.421)

Theory of vapor engines and analysis of actual engine types using gas and vapor compression; internal combustion engines. Theory of gas and vapor flow through orifices and nozzles. Principles of gas compression, analysis of vapor compression, refrigeration systems, low-temperature refrigeration cycles and absorption refrigeration systems.

02.423 Thermodynamics C 4 Q.H.
(Prereq. 02.422)

Air-conditioning principles including psychometrics and heat pumps. Calculation of heating and cooling loads in accordance with A.S.H.R.A.E. practices. Design and performance of steam and gas turbines; spark-ignition and compression-ignition engine design and performance. Fan performance.

02.424 Thermodynamics D 2 Q.H.
(Prereq. 02.422)

The primary modes of heat transfer; thermal conductance/resistance concept; thermal-electrical analog; combined heat transfer mechanisms; basic equations of conduction; thermal conductivity. Analytical solutions of various steady state conduction problems.

02.425 Thermodynamics E 4 Q.H.
(Prereq. 02.424)

Dimensional analysis and similarity considerations, natural and forced convection, hydro-

dynamic and thermal boundary layers, log-mean temperature differences, overall heat transfer coefficients, applications to heat exchangers. Black body radiation; Kirchhoff's law; emissivity and absorbance; radiation between simple bodies. Graphical and numerical methods applied to steady state, conduction problems; radiation and convection effects; transient heat transfer; numerical methods applied to transient problems; heat transfer engineering problems.

02.431 Materials A 4 Q.H.

Lectures on fundamental metallic structures; general metallurgical information covering theoretical aspects of properties, testing, and failure of metals. Supplemented by visual aids. Lectures on alloying and hardening of metals, refinement of metals, equilibrium diagrams, characteristics of engineering metals, principles of metal fabrication.

02.432 Materials B 4 Q.H.
(Prereq. 02.431)

Inorganic materials, i.e., polymers, glasses, ceramics, cements, wood; and materials having important electrical and magnetic properties. A summary of the most recent applications for the fabrication and uses of both metals and nonmetals. Structures of metals, imperfections, phase diagrams, effect of temperature on structure and properties of metals (annealing, recrystallization, recovery, precipitation, diffusion), strengthening mechanisms, mechanical properties of nonferrous metals. Laboratory: experiments in preparation of samples, selection, polishing, and etching; examination of nonferrous metals, use of the microscope, linear analysis, construction of cooling curves, and simple binary phase diagrams.

02.433 Applied Metallurgy 4 Q.H.
(Prereq. 02.432)

Lectures: mechanical properties of ferrous metals; the iron carbon diagram; high-temperature alloys, hardening methods, impact tests, effects of environment on metals. Manufacturing processes; methods of fabrication, limitations on the use of different materials and their processing, casting, welding, cutting, drawing, powder metallurgy. Laboratory: experiments on analysis of stress-strain diagrams of iron and steel, heat treatment of steels; surface corrosion; tempering and drawing; use of metallograph and analysis of the results. Experiments in cold rolling, swagging, drawing of nonferrous metals and analysis of the results. Tension, shear, fatigue, and machinability tests on ferrous metals.

02.441 Fluid Mechanics A 4 Q.H.
(Prereq. 02.412)

Hydrostatics, principles governing fluids at rest; pressure measurement, hydrostatic forces on submerged areas and objects; simple dams,

fluids in moving vessels; hoop tension. Fluid flow in pipes under pressure, fluid energy; power and friction loss; Bernoulli's theorem; flow measurement.

02.442 Fluid Mechanics B 2 Q.H.
(Prereq. 02.441)

Pipe networks and reservoir systems; flow in open channels; uniform flow; energy, friction loss, minor losses, velocity distribution; alternate stages of flow, critical flow; nonuniform flow, accelerated and retarded flow; hydraulic jump and waves.

02.451 Mechanical Vibrations 4 Q.H.
(Prereq. 02.413)

Elements of vibrating systems; one degree of freedom (undamped free and forced vibration from Newton's law of motion and energy methods); natural frequencies; damped free and forced vibration; impedance and mobility; systems with more than one degree of freedom; influence coefficients, Lagrange's equations, generalized coordinates, vibration absorber.

02.452 Experimental Stress Analysis 4 Q.H.
(Prereq. 02.415)

Theory and experimentation showing the application of extensometers and electrical strain gauges as transducers in the field of experimental stress and strain analysis. Theory and laboratory practice; photoelastic methods as applied to classical model analysis and modern coating analysis.

02.461 Machine Shop 4 Q.H.

Introduction to study of machines for metal processing, cutting tools, and fluids. Machinability; automatic machinery.

02.462 Mechanical Technology Laboratory I 2 Q.H.*
(Prereq. 02.431, 02.415, or concurrently)

Experiments concerning the physical properties of materials. Instrumentation and measurement.

02.464 Mechanical Technology Laboratory III 2 Q.H.*
(Prereq. 02.463)

Experiments of a more advanced nature. Introduction to the analog computer and experimental stress analysis.

02.466 Heat Technology Laboratory II 2 Q.H.*
(Prereq. 02.465, 02.424, or concurrently)

Experiments on various types of heat engines. Experimental techniques.

02.467 Project Laboratory 4 Q.H.*
(Prereq. 02.464, 02.466)

A project of analytical, design, or experimental nature. Must be approved by student's faculty adviser. A formal report must be submitted.

02.468 Mechanical Technology Laboratory II 2 Q.H.*
(Prereq. 02.462, 02.415, 02.431)

Experimental procedures to determine mechanical properties of materials under tensile, compressive, torsional, direct shear, flexural, impact, fatigue, and creep loading condi-

tions as they are affected by normal and abnormal environmental conditions, and as they are affected by homogeneity, non-homogeneity, isotropy, and non-isotropy.

02.469 Heat Technology Laboratory I 2 Q.H.*
(Prereq. 02.422 or concurrently)

Experimental procedures to examine the flow of compressible fluids and steam; examine the energy conversion of a fuel into a working substance and the related heat transfer mechanisms; and examine the efficiency of generators, engines, and compressors.

02.599 Special Problems in Mechanical Engineering Technology 4 Q.H.
(Prereq. Consent of Department chairman)

Theoretical or experimental work under individual faculty supervision.

Electrical Engineering Technology

03.410 Electrical Measurements 4 Q.H.
(Prereq. 03.454)

Measurement of voltage, current, power, resistance, capacitance, inductance, impedance, frequency, etc. Direct and substitute measurements. Evaluation of measured data, standard deviation and tolerance limits, instrument calibrations. Effects of residual impedance.

03.411 Electronics I 4 Q.H.
(Prereq. 03.452, 03.440)

Semiconductor diodes; power supplies and filters. Transistors as amplifying devices. Graphical analysis of basic amplifiers; d-c and a-c load lines. Transistor biasing techniques.

03.412 Electronics II 4 Q.H.
(Prereq. 03.411)

Small-signal, low-frequency transistor models. A-c equivalent circuits; low frequency amplifier circuits. Frequency effects in audio amplifiers. High-frequency transistor model. Voltage regulation.

03.413 Electronics III 4 Q.H.
(Prereq. 03.412)

Continuation of transistor circuits. Untuned amplifiers, feedback amplifiers and oscillators, low-frequency, large-signal amplifiers. Field effect transistor circuits.

03.420 Electricity and Electronics I 4 Q.H.
(Prereq. 11.419)

Introduction to circuit analysis, resistive networks, periodic excitation function, steady state a-c circuits. The physical foundations of electronics and the physical operation of electronic devices.

03.421 Electricity and Electronics II 4 Q.H.
(Prereq. 03.420)

Single-stage electronic circuits, magnetic circuits and transformers, electro-mechanical energy conversion, d-c and a-c machines.

03.423 Electronic Laboratory 2 Q.H.*
(Prereq. 03.412)

Experiments working with laboratory equipment and techniques, transistor and crystal-diode characteristics, the impedance bridge, the Q-Meter, coils with iron cores, filter circuits, vacuum and semi-conductor diodes, power supplies including the regulated type, triode and pentode vacuum tubes, silicon-controlled rectifiers, resistance-coupled amplifiers. Transistor usage.

03.424 Circuits Laboratory I 2 Q.H.*
(Prereq. 03.451)

Experimentation in electronic circuit theory utilizing various measurement techniques. Verifying circuit theorems by instrumentation response of circuits to steps and impulses; oscilloscope theory and applications.

03.425 Circuits Laboratory II 2 Q.H.*
(Prereq. 03.424)

Further experimentation in electrical circuits and measurement techniques. Experiments include nonlinear devices, terminal characteristics of active devices, log modulus plots, network parameters and synthesis. Fourier analysis and synthesis.

03.427 Advanced Electronic Laboratory I 2 Q.H.*
(Prereq. 03.423, 03.413)

Experiments dealing with class B audio amplifier with transistors, push-pull amplifiers, drivers, and distortion measurements. Double-tuned transformers, video amplifiers, audio-frequency oscillators, and square-wave testing of audio amplifiers.

03.428 Advanced Electronic Laboratory II 2 Q.H.*
(Prereq. 03.427)

Experiments dealing with operational amplifiers. Modulation of class C amplifier, the diode detector, basic timing circuits, RF and crystal oscillators, networks in FM and television equipment, pulse and counter circuits and frequency dividers, sawtooth generators, unstable (free-running) multivibrators, logic gates, frequency modulation detectors.

03.429 Advanced Electronic Laboratory III 2 Q.H.*
(Prereq. 03.428)

Spectral studies of FM and PM waves; amplitude limiters. The balance modulators and single sideband generators. Binary adders, registers and counters, radio receiver testing, television receiver demonstration, analog computers. Pulse forming and delay lines, slotted lines, a series of five microwave experiments and a series of four digital experiments.

03.430 Energy Conversion 4 Q.H.
(Prereq. 03.452 and 10.422)

Generalized theory of rotating energy conversion devices. Steady state operation of the multiply excited direct-current machine; control of speed; special machines. Transformers and steady state considerations; induction and synchronous machines. Generalized machine and circuit models, transfer functions, and flow chart analysis. Laplace transform techniques as applied to the analysis of dynamic operating modes of rotating machines.

03.437 Distributed Systems 4 Q.H.
(Prereq. 10.422)

Radiation, transmission, and reception of electromagnetic waves. Distributed constants and traveling waves of transmission lines. Differential equations of the uniform line.

03.440 Physical Electronics 4 Q.H.
(Prereq. 11.420)

Electron ballistics and applications. Properties of atoms and electrons as related to conduction of electricity in solids. Fundamentals of semi-conductors, crystal diodes, and transistors. Theory of field-effect transistors, integrated circuits, and photoelectric devices.

03.451 Circuits Analysis I 4 Q.H.
(Prereq. 10.420, 11.419)

Ohm's law, Kirchhoff's current and voltage laws, equivalent resistances and sources, mesh and modal analysis, network theorems, two-port networks and power relation—all with respect to direct currents. Energy storage, singularity functions; response of R, L, and C elements to singularities.

03.452 Circuits Analysis II 4 Q.H.
(Prereq. 03.451)

Complex algebra, phasors, frequency domain, mutual inductance, transformers, steady state a-c theory, driving point and transfer impedances, power and energy in a-c circuits. Laplace transforms; partial fraction expansion; Laplace transform techniques applied to the solution of RLC networks.

03.453 Circuits Analysis III 4 Q.H.
(Prereq. 03.452)

Application of differential equations to the solution of linear, time-invariant electrical networks. Introduction to singularity function, convolution, and time domain transient analysis. Network topology and duality, introduction to the methods of transformation calculus and complex frequency concepts.

03.454 Circuits Analysis IV 4 Q.H.
(Prereq. 03.453)

Signal analysis in the frequency domain. Fourier series. Fourier and Laplace transform methods. A varied selection of circuit problems are solved using Laplace transforms and related theorems.

03.460 Engineering Analysis I

4 Q.H.

(Prereq. 10.422 and 03.452)

Linear algebra and its application to circuit equations. Solution of linear differential equations, including an introduction to Laplace transforms.

03.470 Digital Computers

4 Q.H.

(Prereq. 03.313 or concurrently)

Introduction to the field of digital computer design. Topics include general computer organization, number systems and number representations, design characteristics of major computer units, Boolean algebra applications to computer design.

03.477 Control Engineering I

4 Q.H.

(Prereq. 03.454 and 10.422)

Analysis of linear servomechanisms under both transient and steady state conditions. Signal flow graphs. Laplace transforms used in the formulation of block diagrams and transfer function.

03.478 Control Engineering II

4 Q.H.

(Prereq. 03.477)

System stability. Root locus techniques. Treatment of Nyquist criteria and Bode diagram methods for systems evaluation.

03.490 Optical Instrumentation

4 Q.H.

(Prereq. 10.308 and 10.319)

Telescopes, microscopes, and other optical instruments as optical system components. Includes magnification, aberrations, resolution criteria, photometry. Compatibility of system components and optimization of systems. The basic nonimage-forming systems used for analysis control and metrology.

03.499 Special Problems in Electrical Engineering Technology

4 Q.H.

(Prereq. Consent of Dept. Chairman)

Theoretical or experimental work under individual faculty supervision.

Chemical Engineering Technology**04.481 Nuclear Technology**

4 Q.H.*

(Prereq. 10.422 and 11.319)

Atomic and nuclear structure; discovery and nature of radioactivity. Nuclear reactions and energy, induced nuclear transformations, neutron properties, applications of radio nuclides. Radiological safety; nuclear instrumentation for particle detection, monitoring, and experimentation. The fission process and its applications; nuclear reactors—their classification, design, and application; nuclear fuel processing; radioactive waste disposal. Supplement laboratory experiments.

Graphic Science**09.108 Computers for Engineers**

4 Q.H.

Introduction to use of computers in the solution of engineering problems; FORTRAN programming language. A survey of the organization and function of an elementary digital computer; the use of flowcharts in developing program logic; establishing and manipulating tables, arrays, and matrices in memory; using subprograms and subroutine packages; and graphical output on an X-Y plotter.

09.109 Engineering Graphics and Design

4 Q.H.

The orthographic system as a means of depicting three-dimensional objects and concepts on a two-dimensional medium. Progression from principle views to auxiliary views and sections. Reading and interpreting detail and assembly drawings and depiction by means of pictorial drawings and sketches. Fundamentals of manufacturing processes and dimensions and their interrelationship. Elements of design and student involvement by evaluation of existing

design, components and systems. The student as the creative designer-engineer.

09.114 Introduction to Computers

2 Q.H.

A course for biomedical majors, covering elementary aspects of FORTRAN programming as it applies to solving medical and engineering problems. Subscripted variables and nested DO loops are covered.

09.115 Computer Programming

2 Q.H.

(Prereq. 09.114)

Higher-level programming techniques are developed, including writing subprograms and using scientific subroutine packages. Graphical output using the CalComp plotter is covered.

09.129 COBOL Programming for Computer Science Majors

4 Q.H.

A highly concentrated treatment of the fundamentals of the COBOL programming language, designed for Computer Science majors or others who have experience with other programming languages such as FORTRAN and

BASIC. Topics include input/output and arithmetic operations, conditional statements, COBOL's PERFORM statements, structured programming, manipulation of tabular data, debugging techniques, and developing good programming style.

09.130 Introduction to File Processing 4 Q.H.
(Prereq. COBOL)

As this course makes use of the COBOL programming language, students are expected to have command of the fundamentals of that language. Topics include generating reports; manipulating sequential, indexed-sequential, and direct/relative data files on magnetic tape and disc; record blocking; searching, sorting, updating, purging, and merging operations; random access techniques; introduction to data base management concepts.

09.250 Programming and Algorithms 4 Q.H.
(Prereq. FORTRAN or COBOL)

Top-down modular, and stepwise development and refinement of computer algorithms for problem solving. A well-structured language (PASCAL) will be used throughout the course, but emphasis is upon developing algorithms rather than learning a programming language. Numeric and non-numeric algorithms are considered.

09.251 Compiler Construction 4 Q.H.

An examination of present compiler structures, including lexical and syntax analyses, grammars, symbol table generation, code generation and optimization. In addition, language definition and notation, parsing algorithms, decision stacks and related topics are presented to show how object code is generated in response to a higher-level language.

09.252 Analysis of Programming Languages

(Prereq. Two compiler languages, 4 Q.H.
FORTRAN/COBOL)

Survey of significant features of existing programming languages, their data types and behavior at execution time. Structure of algorithmic languages, declarations, types of program constituents, local and non-local quantities, independent blocks, nested blocks, run-time push-down store. Overall structure of a PL-1 or ALGOL type compiler. Structured programming approach, basic constructs, top-down design. List processing and string manipulation languages; text editing activity.

09.253 Introduction to Artificial Intelligence

(Prereq. One year of high-level language, 4 Q.H.
preferably LISP, although FORTRAN is acceptable)

The course is intended as an introduction to some of the processes involved in intelligent problem-solving. The course will cover the major heuristic search methods used in automatic problem-solving theorem proving and game play-

ing. A background in logic would be helpful, although not necessary; suggest 26.151.

09.421 Principles of Computer Programming I

2 Q.H.

Rules for devising simple FORTRAN programs. Basic input/output techniques. FORMAT control. Algorithms for solving simple scientific problems. Computing large sums; maxima and minima in both discrete and continuous cases.

09.422 Principles of Computer Programming II

(Prereq. 09.421)

2 Q.H.

Extended capabilities of the FORTRAN language. Manipulation of vectors and arrays. Subroutine and function subprogramming. Continued applications of computers, sorting, merging, root determination. A-Format.

09.423 Principles of Computer Programming III

(Prereq. 09.422)

2 Q.H.

Use of scientific subroutines, simulation, random numbers. Introduction to numerical methods (solving simultaneous equations, quadrature, derivatives). Use of plotter language. Display of information.

09.461 Engineering Design Graphics I 2 Q.H.

Introduction to engineering drawing. Orthographic projection and primary auxiliary views. Reading and interpreting multiview drawings. Isometric and oblique pictorial representation.

09.462 Engineering Design Graphics II 2 Q.H.

(Prereq. 09.461)

Emphasis on engineering drawings required to support engineering design, including standard conventions, dimensional, and basic production processes. Shop detail drawings are covered. Exercises in design processes are provided through selected projects and case studies.

09.463 Engineering Design Graphics III 2 Q.H.

(Prereq. 09.462)

Greater involvement in design by examining many commonly used components. Case studies of large systems discussed in class. Advanced design projects assigned.

09.464 Engineering Design Graphics IV 4 Q.H.

(Prereq. 09.463)

Graphical analysis of kinematic elements. Displacement, locus generators, velocity vectors and sliding motion. Simple, compound, and reverted gear trains. Acceleration-analysis mechanisms such as cams and linkages. Functions and scales, nomographs. Introduction to self-connecting (feedback) systems.

Mathematics

10.100 Mathematical Preliminaries I 4 Q.H.

(formerly **Introduction to College Mathematics**)
A review of precollege mathematics, primarily arithmetic. Topics covered include operations with numbers, fractions, decimals, percents, graphs (pictographs, bar graphs, circle graphs, etc.) together with applications of these skills and concepts. The sequel of this course is 10.110.

10.101 Basic Mathematics 4 Q.H.

Systems of linear equations and their graphs. Graphing systems of linear inequalities in two variables with application to linear programming. Introduction to matrices, matrix multiplication, and vectors.

10.102 Basic Mathematics 4 Q.H.

Introduction to probability. Sample spaces with equiprobable events. Permutations and combinations. Conditional probability. Random variables. Introduction to Markov processes.

10.103 Basic Mathematics 4 Q.H.

Elementary statistical concepts. Binomial and normal distributions. Linear regression and correlation. Introduction to game theory; matrix games, mixed strategies. Linear programming applied to zero-sum games.

10.104 Fundamentals of Mathematics 4 Q.H.

How to solve various kinds of algebraic equations: linear, quadratic, and linear systems in two and three unknowns. Applications to word problems such as motion, mixture, and variational problems. The concept of function, graphs, line slopes, and graphs of polynomials. Some elementary trigonometry and vectors in the plane.

10.105 Functions and Basic Calculus 4 Q.H.

Introduction to differential calculus. Elementary rules of differentiation with application to graph sketching and to maximum and minimum problems. Exponential and logarithmic functions with applications to problems in compound interest, population growth, and radioactive decay.

10.107 Calculus 4 Q.H.

Review and continuation of differential calculus. Graphing and differentiation of trigonometric functions. Introduction to integral calculus with applications to geometric problems and to differential equations.

10.108 Probability, Statistics and the Computer 4 Q.H.

(Nonmath majors)

A computer-oriented introduction to statistical methods, with applications in the social and life sciences. SPSS subroutine packages will be taught and used to handle problems in descriptive statistics, confidence intervals, hypothesis testing, and topics from correlation, regression and variance analysis.

10.110 Mathematical Preliminaries II 4 Q.H.

A survey of precollege algebra, including signed numbers, exponents, multiplication of polynomials, factoring, linear equations, graphing, and radicals. The course is intended for students whose background in precollege algebra is weak.

10.118 College Mathematics for Business 4 Q.H.

Sets; rectangular coordinates and graphs; functions and functional notation; linear and quadratic functions; exponential and logarithmic functions; systems of linear equations; summations; inequalities; permutations and combinations; elementary probability concepts; arithmetic and geometric progressions; simple and compound interest; annuities.

10.119 Fundamentals of Mathematics 4 Q.H.

(Prereq. 10.118 or equiv.)

Matrices; Gaussian elimination; inverses of matrices; systems of linear inequalities; feasible regions; graphical solution of linear programming problems; limits; derivatives; differentiation of polynomials; differentiation of exponential and logarithmic functions; maxima, minima, and points of inflection; optimization in nonlinear problems; marginal analysis of cost revenue, and profit functions.

10.120 Introduction to Computers I 4 Q.H.

(Nonmath majors)

This course has two goals: (1) to introduce computers and consider their applications and (2) to introduce computer programming so that the uses and limitations of computers can be discussed intelligently. Small programs will be written and run. Applications such as sorting, searching, data processing, simulation and artificial intelligence will be covered.

10.126 Mainstreams of Mathematics 4 Q.H.

This course traces the development of mathematical thought by focusing on some of its most exciting aspects. Individual projects will supplement lectures and readings, enabling students with diverse backgrounds to rediscover mathematics. The level is nontechnical; no more than high school algebra and geometry are assumed. Topics vary from year to year, but may include mathematical games, a wide variety of puzzles, ancient number systems, logic and computers, calculus and the scientific revolution, art and symmetry. The course may be used to satisfy the math-science distribution requirement but not any major requirements.

10.130 Introduction to Computers and Computation 4 Q.H.

Introduction to problem solving with the use of computers. Design, write, debug, and test programs in BASIC programming language. Application of programming to a wide variety of problems, including statistical analysis of data, plotting, artificial intelligence, and text processing.

10.131 Introduction to Computer Science 4 Q.H.

A second course in programming, teaching problem solving in the context of computing. Structured programming using PASCAL language. Correctness, clarity, and reliability of programs are stressed.

10.140 Mathematical Analysis IV-V 5 Q.H.

(Prereq. Freshman calculus or equiv.)

Designed to help prepare transfer students for numerical analysis and differential equations. Calculus of one and several variables. Linear algebra, vector-valued functions, multiple integration, infinite series, Taylor's theorem and complex numbers.

10.144, 10.145 Calculus each 6 Q.H.

Designed to assist students in overcoming deficiencies in precalculus mathematics without losing ground in the 10.150 sequence. The two quarters review high school algebra, introduce trigonometric functions, and cover the material in 10.150 and 10.151. The five meetings per week include lecture and homework review sessions. Students are placed in this course by request or on the basis of their College Board scores and the results of an orientation week diagnostic test.

10.150 Calculus 4 Q.H.

A first course in calculus in one variable, primarily for engineering students. Functions, graphs, lines, limits, continuity, derivatives, chain rule, curve sketching, related rates, and maxima-minima problems.

10.151 Calculus 4 Q.H.

Continuation of 10.150. The integral in one variable with applications to areas, volumes, lengths, work, pressure, etc. Trigonometric, exponential, and logarithmic functions.

10.152 Calculus 4 Q.H.

Continuation of 10.151. Further techniques of integration, elementary differential equations, polar coordinates, and further applications.

10.153 Calculus 4 Q.H.

(Prereq. 10.152)

Solid analytic geometry, vectors in 3-space, partial derivatives with applications, multiple integration.

10.154 Calculus 4 Q.H.

(Prereq. 10.153)

Linear algebra, power series.

10.155 Mathematical Analysis 4 Q.H.

(Prereq. 10.154)

Ordinary differential equations, with emphasis on methods of solution. Includes first-order equations, Laplace transform, second-order linear equations, and systems of first-order linear equations. (Intended primarily for engineering students.)

10.156 Mathematical Analysis

4 Q.H.

(Prereq. 10.155)

Numerical methods for solving ordinary differential equations, Fourier series, and selected partial differential equations by separation of variables. (Intended primarily for engineering students.)

10.160 Calculus for Biology Majors I

4 Q.H.

A first course in calculus with applications to biology, ecology, and medicine. Differentiation, curve sketching, antidifferentiation, and exponential functions.

10.161 Calculus for Biology Majors II

4 Q.H.

(Prereq. 10.160)

Continuation of 10.160. Exponential growth and decay; integration and area; rules for differentiation; and functions of several variables, with Lagrange multipliers, total differentials, and the method of least squares.

10.162 Calculus for Biology Majors III

4 Q.H.

(Prereq. 10.161)

Continuation of 10.161. The natural logarithm; trigonometric functions; techniques of integration, including numerical methods and differential equations, with separation of variables and qualitative methods.

10.170 Geometry

4 Q.H.

A careful look at classical Euclidean geometry, Hilbert's axioms for geometry, and models; geometries of Bolyai-Lobachevsky.

10.181 Calculus

5 Q.H.

Primarily for mathematics, physics, and chemistry majors. Syllabus for 10.181 through 10.183: derivatives and integrals of one-variable functions. Applications to curve sketching, maxima and minima problems, area, moments, simple volumes, etc. Approximation methods including numerical integration, root finding, Taylor series, and power series. Students will also be required to master the use of the computer to make value tables and plot curves and to implement simple numerical algorithms.

10.182 Calculus II

5 Q.H.

(Prereq. 10.181)

Continuation of 10.181.

10.183 Calculus III

5 Q.H.

(Prereq. 10.182)

Continuation of 10.182.

10.184 Calculus and Linear Methods I

4 Q.H.

(Prereq. 10.183)

Methods of calculus and vector analysis to study curves, surfaces and functions of several variables. Topics include parameterization of lines and planes, tangents and normal vectors, partial derivatives, maxima and minima problems, linear approximations, and tangent planes. Some linear algebra.

10.185 Calculus and Linear Methods II 4 Q.H.

(Prereq. 10.184)

Continuation of 10.184. Multiple integration, line integrals, and exact differentials; various forms of Stokes's theorem. More linear algebra.

10.186 Differential Equations and Linear Methods I 4 Q.H.

Ordinary differential equations and linear algebra. First-order equations, higher- (primarily second-) order linear differential equations, systems of linear differential equations. Linear algebra includes eigenvalues and eigenvectors, primarily for two-dimensional systems. Applications of ordinary differential equations.

10.187 Differential Equations and Linear Methods II 4 Q.H.

(Prereq. 10.186)

Analysis of linear partial differential equation, (wave equations, heat equation, and potential equation). Ordinary differential equations with boundary values, Fourier analysis, orthogonal functions. Also numerical methods and other topics in ordinary differential equations.

10.206 Introduction to Analysis of Algorithms 4 Q.H.

(Prereq. Linear algebra and some knowledge of programming languages)
Theoretical study of algorithm design, evaluation of algorithms, and other algorithmic concepts and techniques useful for computer programming. Topics will include graph and matrix algorithms, testing primeness, factoring; evaluating greatest common divisors, linear diophantine equations; evaluating square roots, logarithms, exponentials, etc.; truncation and round-off errors; random number generation; information organization and retrieval; sorting.

10.207 Differential Equations 4 Q.H.

(Nonmath majors)

(Prereq. 10.183 or equiv.)

An introduction to first- and second-order differential equations, their solution by analytic, geometric, and numerical methods, and their application to problems in the physical and life sciences.

10.208 Probability I 4 Q.H.

(Prereq. 10.154 or 10.185)

Probability functions for finite and infinite spaces; conditional probability and independence; discrete and continuous probability distributions for one or more random variables; expectation; moments; binomial, Poisson, and normal distributions; central limit theorem.

10.209 Probability II 4 Q.H.

(Prereq. 10.208)

Selected topics, including introduction to stochastic processes, with emphasis on Poisson processes and Markov chains.

10.210 Introduction to Discrete Structures 4 Q.H.

Elementary concepts of combinatorial mathe-

ematics. Graph theory, enumeration algorithms, permutation groups, and coding theory. Application of these structures to various areas of computer science.

10.214 Computer Organization and Programming 4 Q.H.

(Prereq. Two quarters of programming)
Basic course in computer organization and machine and assembly language programming. Topics include CPU and index registers, basic types of machine language instruction, programming in MIX and in assembly language. Subroutines and macros, assemblers, loaders, elementary list-processing techniques. Students are required to program several short exercises in assembly language and to undertake a term project at the end of the course.

10.215 Information Structures 4 Q.H.

(Prereq. Two quarters of programming)

Basic information structures for representing and manipulating data in computer programming: arrays, lists, stacks, queues, deques, trees, binary trees. Applications to nonnumeric computations and problems in compiler construction. Searching and sorting methods and their relative merits. Students are required to write programs to implement these structures on a computer.

10.216 Compilers 4 Q.H.

(Prereq. Knowledge of assembly language programming and some knowledge of data structures)

Project: to write (pieces of) a compiler from a higher-level machine language. Lectures on the construction of a compiler-lexical scan, syntax scan, object code generation, symbol table management, object code optimization techniques.

10.217 Elementary Systems Programming 4 Q.H.

Emphasizes input/output and interrupt-driven programming. Students will write assembly language programs for the PDP-11 computer. Previous knowledge of assembly language will be helpful, but is not essential.

10.218 Systems Programming 4 Q.H.

(Prereq. 10.214)

A study of the components of the computer-operating system. Memory management and allocation techniques. Program segmentation and linking; processor management. I/O programming and scheduling I/O operations. External file organization. Multiprocessing, distributed processing, foreground and background processing, parallel processing.

10.219 File Organization and Data-Base Management 4 Q.H.

(Prereq. A course in data structures)

A study of designing and implementing a large data management system. Sequential, indexed-sequential, direct access, and directory-filed

organization. Algorithms for creating and manipulating large data bases, including linked lists, trees, inverted lists, and hierarchical structures. Space allocating and file cataloging. Security and privacy protection in data-base management systems.

10.220 Mathematical Statistics 4 Q.H.
(Prereq. 10.208)

Estimation of parameters, confidence intervals, hypothesis testing, regression, sampling distributions. Introduction to analysis of variance and statistical decision theory.

10.221 Applied Analysis 4 Q.H.
(Prereq. 10.187)

Selected topics chosen to demonstrate the application of mathematics to interesting physical and biological problems. Methods chosen from ordinary and partial differential equations, calculus of variations, Laplace transforms, singular perturbations, special functions, dimensional analysis, and other techniques of applied mathematics.

10.222 Applied Analysis 4 Q.H.
(Prereq. 10.221)
Continuation of 10.221.

10.223 Numerical Analysis 4 Q.H.
(Prereq. Two years of calculus, one course in FORTRAN programming)

A computer-oriented introductory course with emphasis on appreciation of the difference between the theoretical existence of a solution and its numerical calculation. Topics covered: systems of linear equations, nonlinear equations, interpolation and approximation of functions. Students are required to program and analyze problems on a computer.

10.224 Numerical Analysis 4 Q.H.
(Prereq. 10.223)

Continuation of 10.223. Numerical differentiation and integration, solution of ordinary differential equations, and other topics as time permits.

10.226 Functions of a Complex Variable 4 Q.H.
(Prereq. 10.184 or equiv.)

Algebra and geometry of complex numbers. Concepts of limit, continuity, and derivative in the complex domain. Holomorphic functions, series, contour integration. Applications.

10.227 Functions of a Complex Variable II 4 Q.H.
(Prereq. 10.226)

Continuation of 10.226, further topics in complex analysis.

10.230 Linear Programming 4 Q.H.
(Nonmath majors)

(Prereq. One year of college mathematics)
Introduction to concepts and techniques of linear programming, game theory, stochastic processes. Application to economics, social sciences, and other related fields.

10.232 Multivariate Statistics 4 Q.H.
(Prereq. 10.220)

Methods of classification, estimation, and prediction based on several statistical variables.

10.235 Automata Theory and Formal Languages 4 Q.H.
(Prereq. 10.214 and 10.215 or their equiv.)
Finite state machines and regular expressions, context-free grammars. Parsing of context-free languages. Context-sensitive grammars, push-down stores, stack machines and linear-bounded automata. Turing machines, undecidability, description of computation using list structures, program machines and programs.

10.236 Artificial Intelligence 4 Q.H.
(Prereq. 10.215 or 05.202)

Analysis of current computer programs dealing with problems such as theorem proving, chess playing, general problem solvers, robotics, symbolic computation, preceptrons, self-reproducing automata, and parallel machines.

10.240 Mathematical Models in the Life Sciences 4 Q.H.
(Prereq. One year of calculus)

A course in the derivation and solution of mathematical models in the areas of biology, psychology, and the social sciences. Such phenomena as population dynamics, diffusion processes, pollution, control systems, neural networks, and mathematical genetics are studied.

10.241 Mathematical Models in the Life Sciences 4 Q.H.
(Prereq. 10.240)

Continuation of 10.240.

10.246 Linear Algebra I 4 Q.H.
(Prereq. 10.187 or permission of instructor)

Vectors, vector spaces, including function spaces, subspaces. Lengths, angles, scalar products; volumes, determinants. Linear independence and dependence, dimension, linear and affine maps, kernel and image. Algorithms: row operations, double triangular form, inversion. Introduction to linear maps. In particular, characteristic polynomials, eigenvalues, and eigenvectors in low dimensions.

Note: Students who have not completed 10.181-187 should inform the course instructor of their backgrounds.

10.247 Linear Algebra II 4 Q.H.
(Prereq. 10.246)

Detailed study of linear maps. Part I: Symmetric maps and quadratic forms. Isometries and skew-symmetric maps. Decomposition of general linear maps using symmetric maps and isometries. Part II: Polynomials evaluated on linear maps. Generalized eigenspaces. Jordan form. Then, as time permits, an introduction to computational methods with emphasis both on the geometry underlying algorithms and on practical advantages and limitations. Also, a survey

of related areas in mathematics in which linear ideas play a role.

Note: Upper-level students who have not completed the 10.181-10.187 program may take 10.246-10.247. Such students should inform the course instructor regarding their particular backgrounds.

10.250 Analysis I 4 Q.H.

(Prereq. 10.187 or consent of instructor)

The theoretical foundations of calculus: limits, measure, continuity, and related concepts. Analysis I and II are intended to serve as a bridge between the 10.281-287 calculus sequence and the more advanced analysis courses, such as 10.221-2, 10.226, and 10.264-5.

10.251 Analysis II 4 Q.H.

(Prereq. 10.250)

Continuation of 10.250. Once through the calculus again, armed with the concepts introduced in Analysis I.

10.254 Introduction to Groups and Their

Applications

4 Q.H.

Examples of groups (symmetry groups, permutation groups, matrix groups, cyclic groups) and their subgroups. Finite groups and orders of subgroups. Homomorphisms and normal subgroups. Applications to some of the following, depending on time and interest: geometry, number theory, crystallography, physics, and combinatorics.

10.256 Topics in Rings, Fields, and Number

Theory

4 Q.H.

Algebraic properties of the integers and rational, real, and complex numbers. Commutative rings, ideals, integral domains and their quotient fields. Polynomial rings. Quadratic extension fields. Gaussian integers. Other topics as time permits.

10.257 Optimization and Mathematical Game Theory

4 Q.H.

(Prereq. Some linear algebra, e.g., 10.246, or consent of instructor)

Convex sets in Euclidean n -space, linear and nonlinear programming, zero-sum games, dynamic programming. Students are encouraged to program selected solution methods for a computer.

10.264 Recent Ideas in Geometry

4 Q.H.

(Prereq. 10.251 and 10.247 or consent of instructor)

Topics chosen by the instructor may vary each year. Topological classification of surfaces, theory of critical points and singularities of mappings, topological study of vector fields, knot theory, graph theory, differential geometry of surfaces, algebraic curves, homotopy.

10.265 Recent Ideas in Geometry

4 Q.H.

(Prereq. 10.264)

Continuation of 10.264.

10.271 Foundations of Mathematics 4 Q.H.

(Prereq. 10.250 or equiv.)

Logic and set theory. To be offered alternate years.

10.272 Foundations of Mathematics 4 Q.H.

(Prereq. 10.271)

Continuation of 10.271. To be offered alternate years.

10.273 History of Mathematics 4 Q.H.

Development of the various branches of mathematics; lives of outstanding mathematicians; growth of mathematical knowledge and its relation to culture.

10.274 Number Theory 4 Q.H.

(Prereq. 10.246 or consent of instructor)

Properties of integers, divisibility, congruences, and topics chosen from magic squares, diophantine equations, continued fractions, or quadratic fields. No specific subject matter is a prerequisite, but to have sufficient "mathematical maturity," it is recommended that the student complete 10.181-10.187 and 10.246 before taking this course.

10.281-10.289 Directed Study 4 Q.H.

(Prereq. Consent of instructor)

Programs of directed study, held one or more quarters, are available for highly motivated students who wish to explore mathematical situations and theories in depth. Directed study can be used as an opportunity to examine familiar material in fresh ways or to explore new material that is not offered in informal courses. It is hoped that directed study programs will provide students strong in mathematics and the related sciences a chance to develop the art and skill needed to work independently and creatively in mathematics.

Note: Students strong in mathematics are also permitted to enroll in graduate courses in mathematics.

10.295, 10.296, 10.297, 10.298 Honors Program

(each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

10.407 College Algebra and Trigonometry I

4 Q.H.

Fundamental algebraic operations, complex numbers, radicals and exponents, functions, linear and quadratic equations, systems of linear equations, inequalities, roots of polynomial equations.

10.408 College Algebra and Trigonometry II

(Prereq. 10.407)

4 Q.H.

Logarithms, trigonometric functions of angles in degrees and radians, trigonometric identities and equations, right triangles, oblique triangles, complex numbers in trigonometric form, systems of equations, determinants.

10.420 Calculus I

(Prereq. 10.408)

Plane analytic geometry; differentiation of algebraic functions; rate, motion, maximum and minimum problems; derivations of higher order; curve-sketching basics in functions, limits and continuity.

4 Q.H.

10.421 Calculus A

(Prereq. 10.420)

Applications of derivatives to curve sketching, antidifferentiation; the definite integral with applications; calculus of nonalgebraic functions—logarithmic, exponential, and trigonometric. Calculus of inverse trigonometric functions, techniques of integration, polar coordinates, the conic sections, vectors in a plane, indeterminate forms, L'Hopital's rule.

4 Q.H.

10.422 Calculus B

(Prereq. 10.421)

Calculus of functions of several variables, partial differentiation, multiple integrals, infinite series. Vector analysis; matrices and linear algebra.

4 Q.H.

10.423 Differential Equations

(Prereq. 10.422)

Ordinary differential equations—standard types of the first order; linear differential equations, especially with constant coefficients; Laplace transforms; series solutions of differential equations. Fourier series and orthogonal functions.

4 Q.H.

Physics

Courses are listed according to level and degree of specialization and are not in numerical order. General Interest Courses have no prerequisite and may be used to satisfy College of Arts and Sciences distribution requirements in science. Introductory physics courses are basic first-year physics lecture courses; the corresponding laboratories are listed under Introductory Physics Laboratories. Advanced physics and astronomy courses require one year of introductory physics and may be used to satisfy degree requirements for physics majors. Courses marked with a dagger (†) are offered for students in the full-time day program in Lincoln College; they do not fulfill credit requirements in the College of Arts and Sciences.

General Interest Courses

11.109 Physics in Music

4 Q.H.

Discusses the physical principles involved in producing, recording, and reproducing music. Topics include explanations of the operation of various instruments in terms of the basic properties of resonances and waves; physical and psychological response of the ear; the physical basis of the modern (well-tempered) system of tuning; the operation of microphones, amplifiers, loudspeakers, tape recorders, radios, and other devices.

11.180 Introduction to Astronomy I

4 Q.H.

The first quarter of a two-quarter sequence designed to introduce the nonscience student to modern astronomical ideas, many of which have been developed over the past decade. No mathematics or science prerequisites are assumed. The following topics will be covered: the earth in space; tools of the astronomer (nature of light, optical, and radio telescopes, spectroscopes); properties of stars; life and death of stars (birth of stars, main sequence stars, red giants, white dwarfs, supernovas, neutron stars, black holes).

11.181 Introduction to Astronomy II

4 Q.H.

(Prereq. 11.180)

Continuation of 11.180. The solar system (its origin, the planets, knowledge gained from rocket flights); the Milky Way; galaxies (types

and size, evolution); cosmology (the expanding universe, the big bang theory, the universe in the distant future); violent galaxies (Seyfert and radio galaxies, quasars).

93.171 Introduction to Science I

4 Q.H.

93.171 and 93.172 form a two-quarter sequence for nonscience majors, providing an interdisciplinary treatment of the basic ideas of the natural sciences. Concepts such as energy, gravity and the atom will be discussed, followed by a consideration of the ways in which atoms combine to form the substances that comprise matter.

93.172 Introduction to Science II

4 Q.H.

(Prereq. 93.171)

Continuation of 93.171. This part of the course discusses life, its origin from inanimate surroundings, cells, and some of the cellular processes important to living things.

Introductory Physics Courses

11.117 Physics for Science Majors I

4 Q.H.

(Prereq. A beginning calculus course; may be taken concurrently)

Mechanics: kinematics, Newton's laws, circular motion, work energy, linear momentum. To take the laboratory for this course, register for 11.147 concurrently.

11.118 Physics for Science Majors II 4 Q.H.
(Prereq. 11.117)

Rotational motion, angular momentum, harmonic motion, wave motion, sound, heat and thermodynamics, kinetic theory. To take the laboratory for this course, register for 11.148 concurrently.

11.119 Physics for Science Majors III 4 Q.H.
(Prereq. 11.117)

Electricity and magnetism; circuits; electromagnetic waves; topics in modern physics. To take the laboratory for this course, register concurrently for 11.149.

11.126 Physics Review for Engineering Students 6 Q.H.
(Prereq. One year of physics)

A special review course on the material covered in 11.203, 11.204, 11.205, and 11.206. Preparation in calculus is assumed. Passing the course is equivalent to passing 11.206.

11.136 Basic Physics I 4 Q.H.

The physical properties of gases and condensed matter. Force and pressure, hydrostatics, ideal and real gases, condensation and evaporation, surface tension, osmosis and fluid flow. Laboratory is an integral part of the course.

11.137 Basic Physics II 4 Q.H.
(Prereq. 11.136)

Continuation of 11.136. Electric circuits and current flow. AC circuits and measurements with the oscilloscope. Atomic structure and spectroscopy; spectrophotometry. Nuclear physics.

11.171 Physics for the Life Sciences I 4 Q.H.

Vector addition of force, principles of statics. Newton's second law, kinetic and potential energy; pressure static properties of fluids, fluid flow. To take the laboratory with this course, register for 11.173 concurrently.

11.172 Physics for the Life Sciences II 4 Q.H.
(Prereq. 11.171)

Wave motion, sound, light, optics, static electricity, DC circuits, magnetism. To take the laboratory with this course, register for 11.174 concurrently.

11.175 Physics for the Life Sciences III 4 Q.H.
(Prereq. 11.171)

Temperature, gas laws, properties of liquids (surface tension and osmotic pressure), properties of solids, thermal physics, Coulomb's law, atomic and nuclear physics.

11.203. Physics for Engineering Students I 4 Q.H.
(Prereq. A beginning calculus course; may be taken concurrently)

The first quarter of a four-quarter sequence intended primarily for engineering students. Topics covered: mechanics, kinematics, dynamics, Newton's laws, work, energy, linear momentum, collisions.

11.204 Physics for Engineering Students II 4 Q.H.
(Prereq. 11.203)

Continuation of 11.203: Rotational dynamics, angular momentum, statics, harmonic motion, wave motion, sound, heat, and the first law of thermodynamics.

11.205 Physics for Engineering Students III 4 Q.H.
(Prereq. 11.204)

Continuation of 11.204: Electricity: electrostatics, Gauss's law, electric fields, potential, capacitance, resistance, current, Ohm's law, circuits. The magnetic field.

11.206 Physics for Engineering Students IV 4 Q.H.
(Prereq. 11.205)

Continuation of 11.205 Magnetism: Ampere's law, induction, inductance, magnetic energy. Electromagnetic oscillations, electromagnetic waves, polarization. Ray optics: reflection, refraction, mirrors and lenses. Wave optics: interference, diffraction, gratings.

11.417† Physics I 4 Q.H.

(Prereq. 10.307; may be taken concurrently)

Kinematics and dynamics of particle motion, Newton's laws, projectile and circular motion, conservation laws for momentum and energy, rotational motion, simple harmonic motion.

11.418† Physics II 4 Q.H.

(Prereq. 11.317 or 11.417)

Wave motion, intensity, interference phenomena, Doppler effect, vibrating systems, temperature, heat, change of state, heat transfer, kinetic theory of gases, general gas laws, thermodynamics.

11.419† Physics III 4 Q.H.

(Prereq. 11.318 or 11.418)

Electrostatics, magnetism, magnetic induction, induced currents, direct- and alternating-current circuits, properties of light, reflection, refraction, dispersion, optical systems, diffraction, polarization.

11.420† Physics IV 4 Q.H.

(Prereq. 11.319 or 11.419)

Static electric and magnetic fields. Experimental basis for Maxwell's equations. Electromagnetic waves.

11.473† Physics Lab I 2 Q.H.

Experiments form various physics topics that have been covered in 11.417 and, concurrently, in 11.418.

11.474† Physics Laboratory II 2 Q.H.

(Prereq. 11.373 or 11.473)

A continuation of 11.473, with experiments from topics in 11.418 and 11.419.

Introductory Physics Laboratories

11.110 Physics Laboratory for Engineering Students I 1 Q.H.

(Prereq. 11.205)

The first of a two-quarter laboratory sequence in which the student performs experiments from various fields of physics.

11.111 Physics Laboratory for Engineering Students II 1 Q.H.

(Prereq. 11.110)

Continuation of 11.110.

11.147 Physics Laboratory for Science Majors I 1 Q.H.

(Prereq. 11.117 concurrently)
Laboratory experiments related to topics covered in 11.117 and 11.167.

11.148 Physics Laboratory for Science Majors II 1 Q.H.

(Prereq. 11.118 concurrently)
Laboratory experiments related to topics covered in 11.118 and 11.168.

11.149 Physics Laboratory for Science Majors III 1 Q.H.

(Prereq. 11.119 concurrently)
Laboratory experiments related to topics covered in 11.119 and 11.169.

11.173 Physics Laboratory for the Life Sciences I 1 Q.H.

(Prereq. 11.171 concurrently)
The first quarter of a two-quarter laboratory sequence accompanying 11.171 and 11.172.

11.174 Physics Laboratory for the Life Sciences II 1 Q.H.

(Prereq. 11.173 and 11.172, or 11.175 concurrently)

Continuation of 11.173.

11.373† Physics Laboratory I 2 Q.H.

Experiments from various physics topics that have been covered in 11.317 and, concurrently, in 11.318.

11.374† Physics Laboratory II 2 Q.H.

(Prereq. 11.373)
A continuation of 11.373, with experiments from topics in 11.318 and 11.319.

Advanced Physics and Astronomy Courses

11.127 Intermediate Mechanics 4 Q.H.

(Prereq. Changed to [11.118, 11.119] and [10.184 concurrently])
Classical mechanics in two and three dimensions; a review of Newton's laws. Special emphasis on conservation theorems for energy, momentum and angular momentum. Harmonic and wave motion.

11.128 Electric and Magnetic Fields 4 Q.H.

(Prereq. 11.127 and [10.185 concurrently])
The basic concepts of electric and magnetic fields. Covers electric and magnetic fields in free space and materials, and Maxwell's equations in integral form.

11.182 Astrophysics and Cosmology I 4 Q.H.

(Prereq. Two quarters of elementary physics)
The first of a two-quarter course. Its purpose is to introduce the student who has had two quarters of elementary physics to current ideas in astrophysics and cosmology. Emphasis is placed on surveying recent advances in this field. The course will include elements of geometry, trigonometry, and algebra. Topics to be covered include tools of the astronomer (telescopes, radio telescopes, spectroscopes); stellar properties (distances, stellar radii, magnitude and luminosity); stellar spectra; Hertzsprung-Russell diagram; stellar energy sources (gravitational energy, stellar nuclear reactions); evolution of stars (birth, main sequence, red giants, white dwarfs, supernovas, neutron stars and pulsars, black holes and gravitational collapse); Milky Way (galactic rotation, galactic nucleus; cosmic rays); extragalactic objects (masses of galaxies, clusters of galaxies, galactic distances, radio galaxies, Quasars); cosmology (Olber's paradox; recession of galaxies; big bang theory, 3°K radiation; formation of galaxies; the universe in the distant future).

11.200 Classical Mechanics 4 Q.H.

(Prereq. 11.127 and 10.186)
Advanced topics in classical mechanics. Vector kinematics, harmonic oscillator and resonance, generalized coordinates, Lagrange's equations, central forces and the Kepler problem and rigid body motion.

11.208 Mathematical Physics 4 Q.H.

(Prereq. 11.119 and 10.185 and 10.187 concurrently)
Review of linear algebra and vector calculus. Special functions and partial differential equations of physics. Potential theory. Functions of a complex variable.

11.21A (B, C, etc.) Independent Study 1 Q.H.

11.22A (B, C, etc.) Independent Study 2 Q.H.

11.23A (B, C, etc.) Independent Study 3 Q.H.

11.24A (B, C, etc.) Independent Study 4 Q.H.

11.211 Electricity and Magnetism I 4 Q.H.

(Prereq. 11.128; 11.208 or equiv.)
The first of a two-quarter sequence in electromagnetic theory. Maxwell's equations and their experimental basis; electrostatics and magnetostatics; the electromagnetic field in empty space; electromagnetic waves.

11.212 Electricity and Magnetism II 4 Q.H.

(Prereq. 11.211 or equiv.)
Continuation of 11.211. Energy and momentum in the electromagnetic field. Electrodynamics; the interaction of matter and the field. Radiation.

11.220 Thermodynamics and Kinetic Theory

(Prereq. 11.119 or 11.206; 10.185) 4 Q.H.

First and second laws of thermodynamics. Entropy and equilibrium. Thermodynamic potentials. Elementary kinetic theory. Statistical mechanics and the statistical interpretation of entropy.

11.221 Wave Motion and Optics 4 Q.H.

(Prereq. 11.128)

Harmonic and coupled oscillators, wave equation. Geometrical and physical optics; interference, diffraction, optics of solids, amplification of light; lasers.

11.230 Modern Physics 4 Q.H.

(Prereq. 11.119 or 11.206 or equiv.)

A review of experiments demonstrating the atomic nature of matter, the properties of the electron, the nuclear atom, the wave-particle duality, spin, and the properties of elementary particles. The course discusses, mostly on a phenomenological level, such subjects as atomic and nuclear structure, properties of the solid state, and elementary particles.

11.240 Quantum Mechanics I 4 Q.H.

(Prereq. 11.230 or 12.170; 11.208 or equiv.)

The first of a two-quarter sequence in quantum mechanics. Observations of macroscopic and microscopic bodies. The uncertainty principle, wave-particle duality, probability amplitudes, Schrodinger wave theory, and one-dimensional problems.

11.241 Quantum Mechanics II 4 Q.H.

(Prereq. 11.240)

Continuation of 11.240. Discrete and continuous states, Schrodinger equation in three dimensions, angular momentum, general theory of quantum mechanics, applications.

11.246 Electronics for Scientists I 4 Q.H.

11.246 and 11.247 form a two-quarter sequence covering electronic techniques for experimental research in many different fields of science. Topics include principles of semiconductor devices; analog techniques (amplification, feedback, integration); digital techniques (counting, multiplexing, logic); design of electronic subsystems (analog-to-digital converters, phase-sensitive detectors, data-logging systems); understanding specifications of commercial electronic equipment. Lab examples make use of up-to-date integrated and discrete devices, such as are currently used in the electronic industry.

11.247 Electronics for Scientists II 4 Q.H.

(Prereq. 11.246)

Continuation of 11.246.

11.260 Wave Laboratory 4 Q.H.

(Prereq. 11.128 or 11.206)

A general treatment of the problems of mechanical and electromagnetic radiation as wave phenomena. The differential wave equation and its application to selected topics. Interference and diffraction theory from the standpoint of the Huygens-Fresnel and Kirchhoff formulations. Selected experiments in acoustics, optics, and microwaves to illustrate these problems.

11.272 Modern Physics Laboratory 4 Q.H.

(Prereq. 11.230 or permission of instructor)

Experiments investigating the atomic nature of matter, the properties of the electron, and special relativity. The work involves vacuum system techniques and machine-shop practice.

11.273 Advanced Physics Laboratory 4 Q.H.

(Prereq. 11.246 and 11.260)

Special projects in modern experimental physics.

11.282 Introduction to Solid-State Physics 4 Q.H.

(Prereq. 11.230 or 12.170; 11.220 or equiv.)

A semi-classical treatment of the thermal, magnetic, and electrical properties of crystalline solids. Topics include X-ray diffraction and the reciprocal lattice, elasticity and lattice vibrations, specific heat, properties of insulators, magnetism in insulators and metals, introduction to the band theory of metals.

11.285 Introduction to Nuclear Physics 4 Q.H.

(Prereq. 11.230)

Nuclear structure, nuclear masses, radioactivity, nuclear radiation, interaction of radiation and matter, detectors, fission, nuclear forces, elementary particles.

11.295, 11.296, 11.298 Junior-Senior Honors**Program** (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

Chemistry**12.101 General Chemistry** 3 Q.H.*

Basic principles of inorganic and organic chemistry and how they relate to human body processes.

*Lab fee required.

12.102 General Chemistry

(Prereq. 12.101)

Biochemistry principles.

3 Q.H.*

- 12.106 General Chemistry** 5 Q.H.*
For non-chemistry majors. Basic concepts and definitions: the mole concept and chemical stoichiometry, states of matter, solutions, periodicity of elements, atomic structure, chemical bonding and reactions.
- 12.107 General Chemistry** 5 Q.H.*
(Prereq. 12.106)
For non-chemistry majors. Chemical kinetics and equilibria, acids and bases, elementary thermodynamics, electrolysis and electrochemistry, chemistry of representative elements, nuclear chemistry, introduction to organic chemistry.
- 12.114 General Chemistry** 4 Q.H.
Primarily for engineering students. Introduction to the principles of chemistry, focusing upon the states and structure of matter and chemical stoichiometry.
- 12.115 General Chemistry** 4 Q.H.
(Prereq. 12.114)
Primarily for engineering students. Introduction to the principles of chemistry, focusing upon chemical equilibria and the nature of some common materials.
- 12.118 General Chemistry Laboratory** 1 Q.H.*
Optional laboratory for 12.115, General Chemistry for engineering students. Experiments pertaining to lecture material.
- 12.124 General Chemistry** 4 Q.H.
Similar to 12.127, but without laboratory. (Not available to majors from Chemistry, Biology, or Pharmacy/Allied Health Sciences.)
- 12.125 General Chemistry** 4 Q.H.
(Prereq. 12.124)
Similar to 12.128, but without laboratory. (Not available to majors from Chemistry, Biology, or Pharmacy/Allied Health Sciences.)
- 12.127 General Chemistry** 5 Q.H.*
For Chemistry majors and selected students in other majors, such as Biology, Physics, etc. Basic concepts and definitions, moles, gas laws, stoichiometry, atomic structure, periodic properties, chemical bonding.
- 12.128 General Chemistry** 5 Q.H.*
(Prereq. 12.127 or 12.124)
Solutions, chemical kinetics, chemical equilibrium, chemical thermodynamics, electrochemistry, chemistry of the representative elements.
- 12.129 The Chemical Elements** 5 Q.H.*
(Prereq. 12.128 or 12.107)
For Chemistry majors and selected students in other departments, such as Biology, Physics, etc. The principle concepts of chemistry (thermodynamics, chemical bonding, and chemical kinetics) are applied to a systematic survey of the characteristic behavior of the chemical elements and their compounds.
- 12.144 Organic Chemistry** 5 Q.H.*
(Prereq. 12.128 or 12.107)
Nomenclature, preparation, properties, and reactions of common organic compounds.
- 12.145 Organic Chemistry** 5 Q.H.*
(Prereq. 12.144)
Continuation of 12.144.
- 12.147 Organic Chemistry** 4 Q.H.*
(Prereq. 12.115)
Aliphatic compounds: preparation, properties, and reactions of the more common classes of open-chain compounds; electronic interpretation of structures and reactions; petrochemicals; synthetic resins; carbohydrates; fats; proteins.
- 12.148 Organic Chemistry** 4 Q.H.*
(Prereq. 12.147)
Aromatic compounds: preparation, properties, and reactions of the more common classes of aromatic compounds; electronic interpretation of structures and reactions of aromatic compounds; dyes, commercial solvents, and important industrial products. A brief introduction to alicyclic and heterocyclic compounds.
- 12.153 Organic Chemistry** 3 Q.H.
(Prereq. 12.129)
Syntheses and properties of aliphatic and aromatic hydrocarbons and their functional derivatives; correlation between the structure of organic compounds and their physical and chemical properties; electronic interpretation of organic reactions.
- 12.154 Organic Chemistry** 5 Q.H.*
(Prereq. 12.153)
Continuation of 12.153.
- 12.155 Organic Chemistry** 5 Q.H.*
(Prereq. 12.154)
Continuation of 12.154.
- 12.161 Physical Chemistry** 4 Q.H.*
(Prereq. 10.152 and 11.118 or equiv.)
Chemical thermodynamics.
- 12.162 Physical Chemistry** 4 Q.H.*
(Prereq. 12.161)
Phase equilibria, solutions, kinetic theory of gases, chemical kinetics.
- 12.166 Physical Chemistry** 3 Q.H.
(Prereq. 10.152 and 11.118 or equiv.)
Similar to 12.161, but without laboratory.
- 12.168 Physical Chemistry** 4 Q.H.*
(Prereq. 12.162 or 12.169)
Quantum chemistry, particles and waves, Schrodinger wave mechanics, the chemical bond.
- 12.169 Physical Chemistry** 3 Q.H.
(Prereq. 12.161 or 12.166)
Similar to 12.162, but without laboratory.
- 12.170 Physical Chemistry** 3 Q.H.
(Prereq. 12.162 or 12.169)
Similar to 12.168, but without laboratory.

- 12.171 Analytical Chemistry** 4 Q.H.*
(Prereq. 12.107 or equiv.)
Theories, principles, and application of volumetric, gravimetric, and instrumental methods of analysis.
- 12.172 Analytical Chemistry** 5 Q.H.*
(Prereq. 12.128 or 12.107)
Experimental techniques of chemical analysis. Principles and applications of absorption spectrometry, ion selective measurements, titrimetry and gravimetry.
- 12.179 Instrumental Analysis** 5 Q.H.*
(Prereq. 12.172)
Experimental techniques of instrumental analysis. Principles and applications of spectrometry, electrometric methods, chromatography.
- 12.180 Chemical Oceanography** 4 Q.H.*
(Prereq. 12.171, 12.172, or permission of instructor)
Experimental techniques of ocean chemistry. Chemical and physical properties of sea water; chemical composition; interaction with air, sediments, and chemical pollutants.
- 12.181 Instrumental Analysis** 3 Q.H.
(Prereq. 12.171 or 12.172)
Similar to 12.179, but without laboratory.
- 12.183 Principles of Experimental Chemistry** 4 Q.H.*
(Prereq. 10.183 and 11.119 or equiv.)
Design of experimentation, data acquisition, data recording, treatment of data. The accompanying laboratory considers measuring, processing, and recording electrical signals, and optical experiments pertinent to chemical instrumentation.
- 12.213 Inorganic Chemistry** 4 Q.H.
(Prereq. 12.168)
Atomic properties of free atoms and ions. Ionic bonding and the structure of the solid state. The Madelung calculation; the Born-Haber and other thermodynamic cycles. Valence-bond, molecular, orbital, and crystal field theories of bonding. Stereochemistry of compounds of representative elements. Electron-deficient compounds. Spectral and magnetic properties of transition metal compounds.
- 12.221 Polymer Chemistry I** 3 Q.H..
(Prereq. 12.155 or equiv.)
Introduction to polymers. Major emphasis on synthesis. Step-reaction, chain-reaction, and ring-opening polymerizations. Copolymerization. Three-dimensional polymers and cross-linking. Corresponds to graduate course 12.901.
- 12.222 Polymer Chemistry II** 3 Q.H.
(Prereq. 12.162 or equiv.)
Physical chemistry of polymers in solution and bulk. Molecular characterization. Mechanical and physical properties in the glassy, rubbery, viscous, and semicrystalline states. Corresponds to graduate course 12.902.
- 12.223 Polymer Chemistry III** 3 Q.H.
(Prereq. 12.221 and 12.222)
Industrial practice, polymer processing, fibers, elastomers, coatings, adhesives, reinforced plastics. Relationship of polymer structure to usage. Corresponds to graduate course 12.903.
- 12.252 Advanced Organic Chemistry I** 3 Q.H.
(Prereq. 12.155 or 12.145)
Organic structure and reactions. Corresponds to graduate course 12.861.
- 12.253 Identification of Organic Compounds** 3 Q.H.*
(Prereq. 12.155)
Qualitative analysis of organic compounds and mixtures, using physical, chemical and instrumental methods.
- 12.254 Advanced Organic Chemistry II** 3 Q.H.
(Prereq. 12.252)
Organic structure and reactions. Corresponds to graduate course 12.862.
- 12.255 Advanced Organic Chemistry III** 3 Q.H.
(Prereq. 12.254)
Organic structure and properties. Corresponds to graduate course 12.863.
- 12.256 Spectrophotometric Identification of Organic Compounds** 3 Q.H.
(Prereq. 12.155)
Spectrophotometric identification of organic compounds. Corresponds to graduate course 12.866.
- 12.257 Advanced Analytical Chemistry I** 3 Q.H.
(Prereq. 12.179)
Analytical separations. Corresponds to graduate course 12.821.
- 12.258 Advanced Analytical Chemistry II** 3 Q.H.
(Prereq. 12.179)
Electroanalytical. Corresponds to graduate course 12.822.
- 12.259 Advanced Analytical Chemistry III** 3 Q.H.
(Prereq. 12.179)
Optical methods of analysis. Corresponds to graduate course 12.823.
- 12.262 Advanced Physical Chemistry I** 3 Q.H.
(Prereq. 12.168)
Chemical thermodynamics. Corresponds to graduate course 12.881.
- 12.263 Advanced Physical Chemistry II** 3 Q.H.
(Prereq. 12.168)
Atomic and molecular structure. Corresponds to graduate course 12.885.
- 12.264 Advanced Physical Chemistry III** 3 Q.H.
(Prereq. 12.168)
Chemical kinetics. Corresponds to graduate course 12.893.
- 12.266 Advanced Inorganic Chemistry I** 3 Q.H.
(Prereq. 12.213)
Application of quantum chemistry to inorganic systems. Corresponds to graduate course 12.841.

12.267 Advanced Inorganic Chemistry II 3 Q.H.
(Prereq. 12.266)

Continuation of 12.266. Corresponds to graduate course 12.842.

12.268 Advanced Inorganic Chemistry III 3 Q.H.
(Prereq. 12.267)

Chemistry of the solid state. Corresponds to graduate course 12.843.

12.274, 12.275, 12.276, 12.277, 12.278, 12.279
Undergraduate Research (each) 4 Q.H.

Original experimental work under the direction of a staff member. Participation may begin in the middle year and will normally continue through the senior year. Approval of the administering committee is required.

12.284 Advanced Chemical Synthesis 3 Q.H.*
(Prereq. 12.155)

Special projects in the synthesis of organic and/or inorganic compounds.

12.286 Advanced Chemical Measurements (Prereq. 12.168 and 12.179) 3 Q.H.*

Laboratory problems in analytical and/or physical chemistry.

12.288 Special Topics 4 Q.H.
(Prereq. 12.168)**12.295, 12.296, 12.297, 12.298 Junior-Senior Honors Program (each) 4 Q.H.**

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

Earth Sciences

16.109 Environmental Geosciences I 4 Q.H.

Emphasis placed on applying man's understanding of earth's surface processes both to making decisions and evaluating the decisions made by others (i.e., neighbors, industry, and governments). Topics include earthquakes—control and prediction; the earth as a source of energy and other materials; groundwater—needs and pollution; disposal of wastes in the earth.

16.110 Environmental Geosciences II 4 Q.H.

An approach similar to that of Environmental Geosciences I but with an emphasis on atmospheric components and systems interacting with man. Specifically treated are such problems as population growth and compaction, as well as weather control, climatic modification, and pollution hazards.

16.130 Marine Resources 4 Q.H.

A qualitative and quantitative survey of renewable and nonrenewable resources from the sea. Aspects covered include offshore oil and gas utilization, marine minerals, and tidal power; coastal zone recreational resources, including polluted beaches and artificial fishing reefs.

16.131 Oceanography I 4 Q.H.**

The geology of the ocean basins; the physical and chemical properties of sea water; the development of ocean currents and their important effects on the land masses of the world.

16.132 Oceanography II 4 Q.H.**

The productivity of animal and plant life in the various zones of the ocean; the growing economic importance of the oceans as a source of food for the expanding world population.

16.161 Observational Astronomy 4 Q.H.

Introduction to the night sky by confrontation technique. Identification of the permanency of the circumpolar region. A systematic analysis of the available hour-angle constellations. Relevant supportive data provided for each nightly viewing. Continuous records of the characteristic

behavior of the sun, moon and available naked-eye planets. Periodic out-of-doors viewing sessions with binoculars and telescopes (amateur quality), especially on occasions of special phenomena, i.e., meteor showers and comets. Explanatory instructional information during open portions of class periods by lecture, lecture-demonstration, or planetary sessions.

16.165 Principles of Planetary Science 4 Q.H.

Ancient concepts of the "Universe" derived from naked-eye observations; the evolutionary development of the Ptolemaic universe and its final defeat by the observations of scientists ranging from Copernicus to Newton. Detailed studies of the characteristic physico-chemical features and behaviors of the individual components of the solar system. Non-Copernican phenomena: meteors, meteor showers, aurora, etc.; the recent contributions of the NASA programs to our understanding of our earth.

16.191 Meteorology 4 Q.H.

Atmospheric factors and processes which determine weather. Examples used to illustrate general concepts will be drawn from the New England region.

16.200 Geology of New England 4 Q.H.

Geological development of the Appalachian Mountains in New England. First half of course on bedrock geology; second half on evolution of the surface features, chiefly by glacier action, during the recent ice age.

16.201 Physical Geology 4 Q.H.

A systematic study of the materials comprising the earth. Topics emphasized include the processes by which rock is formed, transported, altered, and destroyed, as well as the nature and development of landscape.

16.202 Historical Geology 4 Q.H.

The physical and biological history of the earth is traced through geologic time. Major topics are the origin and evolution of life, mountain building, and continental drift.

*Lab fee required.

16.203 Physical Geology Laboratory 1 Q.H.*
(Prereq. 16.201; may be taken concurrently)
Optional laboratory for 16.201, Physical Geology. Laboratory exercises pertain to mineral and rock identification and topographic and geologic map interpretation. Required of Geology majors.

16.204 Historical Geology Laboratory 1 Q.H.*
(Prereq. 16.202; may be taken concurrently)
Fossil representatives of major invertebrate phyla; application of fossils to studies of rock sequences; and interpretation of geologic history from geologic maps.

16.206 Rock Identification Laboratory 1 Q.H.
(Prereq. 16.211; may be taken concurrently)
Self-paced laboratory exercises in the identification and classification of common rocks.

16.211 Descriptive Mineralogy 4 Q.H.*
(Prereq. One year of chemistry)
Study of mineralogy, including crystallography and physical, chemical, and descriptive mineralogy of the common rock-forming minerals.

16.212 Optical Crystallography 4 Q.H.*
(Prereq. 16.211)
Both the theory and the practical methods of optical crystallography are studied, including the basic techniques for determining the optical constants of crystals using the polarizing microscope and immersion media.

16.213 Optical Mineralogy 4 Q.H.*
(Prereq. 16.212)
The identification of the common rock-forming minerals using the petrographic microscope and rock-thin sections, including an introduction to mineral phase relationships.

16.214 Geochemistry 4 Q.H.
(Prereq. One year of chemistry)
An evaluation of chemical processes important in the various geologic environments and their effects on the development of the lithosphere.

16.216 Igneous and Metamorphic Petrology 4 Q.H.*
(Prereq. 16.213)
The evolution of crystalline rocks and their distribution in time and space, including the physical and chemical factors in igneous and metamorphic processes.

16.221 Stratigraphy and Sedimentation 4 Q.H.*
(Prereq. 16.202)
The lithologic properties and stratigraphic relationships of sedimentary rock. Sedimentary processes, facies, and provinces of deposition are considered in conjunction with the collecting and evaluating of stratigraphic data. Classic stratigraphic sequences are reviewed, with emphasis on the general stratigraphic principles they illustrate.

16.222 Sedimentary Petrology 4 Q.H.*
(Prereq. 16.212)
The origin, classification, petrography, and en-

vironment of deposition of all important types of sedimentary rocks. Laboratory work is concerned with the study and interpretation of sedimentary rocks in thin section.

16.231 Glacial and Pleistocene Geology 4 Q.H.
(Prereq. 16.202)

The processes of ice movement and the characteristics and distribution of erosional and depositional structures associated with past and present glaciers. Introduction to Pleistocene chronology and correlations.

16.232 Geomorphology 4 Q.H.
(Prereq. 16.201)

The origin and evolution of landscape features by processes operating at or near the earth's surface.

16.233 Coastal Processes 4 Q.H.
(Prereq. 16.201)

The effect of coastal marine processes and the resultant coastal responses. The dynamics of waves and currents and the associated erosion, transportation, and deposition of sediment forming beaches, barrier islands, and cliffed structures.

16.235 Landform Interpretation 4 Q.H.

The origin and evolution of landscapes which may be interpreted on the basis of the size, shape, orientation, composition, and distribution of topographic features. Particular attention is given to the effects of different climates on landscape evolution. The use of topographic maps, geologic maps, and stereo-aerial photographs is emphasized.

16.241 Structural Geology 4 Q.H.**
(Prereq. 16.201)

The fundamentals of rock structure and the mechanics of rock deformation. Folds, faults, joints, and cleavage, and their importance in geological interpretation. Analysis of structures in the field. Laboratory work consists of three-dimensional problems involving structural concepts.

16.242 Geophysics 4 Q.H.
(Prereq. 11.117)

Study of basic techniques of reflection and refraction seismology, gravity, aeromagnetic, and heat-flow techniques and the information they provide on the structure, composition, and dynamics of the earth's interior. Emphasis will be placed on the application of the these techniques to the search for economic minerals in the earth's crust.

16.245 Economic Geology 4 Q.H.
(Prereq. 16.211 or Dept. approval)

The genesis, associations, and occurrence of the major ore minerals, illustrated by studies of selected ore bodies of various types throughout the world.

- 16.246 Field Geology** 4 Q.H.*
(Prereq. 16.201)
Field techniques as a working guide for the approach, pursuit, and solution of geologic problems. Among the techniques considered are geologic map construction, stratigraphic section measurement, and field rock description. The laboratory consists of field research at a quarry, roadcut, or other geologic exposure.
- 16.251 Paleontology** 4 Q.H.
(Prereq. 16.202)
Survey of important invertebrate phyla preserved in the geologic record. Correlation, evolution, paleoecology, and other biologic concepts are applied to fossil organisms.
- 16.261 Advanced General Geology** 4 Q.H.
(Prereq. 16.201, 16.202)
Introduction to new and advanced concepts, theories, and hypotheses in geology. Students participate actively in discussions, research papers, and individual projects. Topics may include continental drift, sea floor spreading, uniformitarianism, peneplanation, evolution, origin of magma, and origin and geologic history of the moon.
- 16.271 Geology Seminar** 4 Q.H.
(Prereq. Major in Geology or senior status)
In-depth study, on an individual or small-group basis, of a selected geologic topic. Both oral and written presentations are required.

Biology

- 18.114 Functional Human Anatomy I** 5 Q.H.*
(Not open to Biology majors)
Cellular and tissue structure and function, followed by anatomical terminology. Histology, anatomy, and physiology of bones, muscles, blood, and nervous systems. The laboratory includes a study of human bones, cat dissection, and related histology.
- 18.115 Functional Human Anatomy II** 5 Q.H.*
(Not open to Biology majors)
(Prereq. 18.114)
Anatomy and physiology of the respiratory, digestive, urogenital, and circulatory systems. Physiology of endocrine system and a brief exploration of the anatomy and physiology of eye and ear. The laboratory includes studies of muscle and nerve physiology, blood physiology and histology, and physiology of respiration.
- 18.116 The Human Organism** 4 Q.H.*
(Not open to Biology majors)
Introduction to the structure and function of the human body, designed for nonscience majors. Emphasis will be on the principles of biological and physical science as they relate to life processes in health and disease. Laboratory experiments will explore the workings of the

- 16.287, 16.288 Undergraduate Research** (each) 4 Q.H.
Independent research on a selected topic under the direct supervision of a faculty member. Open only to juniors and seniors majoring in geology, with the recommendation of the supervising faculty member and the Department.
- 16.290, 16.291 Directed Study** (each) 4 Q.H.
Independent study of a specific topic not normally contained in the regular course offerings, but within the area of competence of a faculty member. Open to all students with the recommendation of a faculty member and departmental approval.
- 16.292, 16.293 Special Studies** (each) 4 Q.H.
Independent study of a specific topic. Open to all students with the recommendation of a faculty member and departmental approval.
- 16.295, 16.296, 16.297, 16.298 Junior-Senior Program** (each) 4 Q.H.
For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

students' own biological systems rather than those of animals.

- 18.117 Human Biology** 3 Q.H.
(Not open to Biology majors)
General biological principles applied to and illustrated by the human species; human cellular structure and basic metabolic processes; human genetics, human reproduction, human evolution, human ecology and interactions with other species of plants and animals.
- 18.118 Organic Evolution** 4 Q.H.
(Not open to Biology majors)
The major features of organic evolution, with emphasis on vertebrate evolution, genetics, and physical influences.
- 18.119 Environment and Man** 4 Q.H.
(Not open to Biology majors)
An ecological analysis of man's interaction with other organisms. The necessary foundation of biological principles will be presented.
- 18.120 Basic Microbiology** 4 Q.H.*
(Not open to Biology majors)
Microbial life, emphasizing morphological characteristics, physiological activities, and disease production.

18.121 Introductory Microbiology 3 Q.H.*(Not open to Biology majors)*

Similar to 18.120, but without laboratory.

18.123 Biology of Human Reproduction 4 Q.H.*(Not open to Biology majors)*

Structure and function of male and female reproductive systems; factors affecting sexual development, fertility, and reproductive behavior in the human species. Physiology of coitus, fertilization, pregnancy, birth, and lactation. Methods of controlling fertility.

18.131 General Biology 4 Q.H.*

Universal properties and processes of living organisms. Cellular composition and cellular activities, inheritance and cellular control, the evolutionary process, environmental relationships.

18.132 Animal Biology 4 Q.H.**(Prereq. 18.131)*

Systematic comparative study of the structure and functions of animals. Diversity of animals considered from the standpoint of evolutionary adaptation.

18.133 Plant Biology 4 Q.H.**(Prereq. 18.131-18.132)*

Introduction to the structure of plant cells; structure and function of roots, stems, and leaves of flowering plants; survey of the major groups in the plant kingdom, including their morphology, reproductive biology, and economic importance.

18.134 Environmental and Population Biology*(Prereq. 18.131-18.133)*

4 Q.H.*

Detailed consideration of the physico-chemical factors influencing and influenced by organisms. Interactions among individual organisms and among species. Change of species by genetic natural selection. Development of communities and function of ecosystems.

18.135 Genetics and Development Biology*(Prereq. 18.131-18.133)*

4 Q.H.*

Elaboration of the classic laws of heredity. Cytogenetics. Chemical basis of heredity. Selected examples of the development of form and function.

18.136 Cell Physiology and Biochemistry*(Prereq. 18.131-18.133 and 12.171)*

4 Q.H.*

Basic chemical and physical enzyme kinetics; processes of cells related to their fine structure; oxidative and intermediary metabolism; photosynthesis, membrane phenomena; chemical and physical processes of prokaryotic and eukaryotic cells.

18.138 Advanced Placement General Biology

4 Q.H.*

Covers same general principles of biology as 18.131, but both lecture and laboratory use examples from the world of micro-organisms. Micro-organisms (bacteria, fungi, algae) provide favorable experimental material to be used as

model systems for the study of general biological problems originally identified in larger organisms.

18.141 Basic Animal Biology I

4 Q.H.*

(Not open to Biology majors)

Principles of biology. Universal properties and processes of living organisms as exemplified by the cell and its activities. Inheritance, evolution, and environmental relationships.

18.142 Basic Animal Biology II

4 Q.H.*

*(Prereq. 18.141)**(Not open to Biology majors)*

Systematic, comparative study of the structure and functions of animals. Diversity of animals considered from the standpoint of evolutionary adaptation.

18.143 Human Physiology I

4 Q.H.*

*(Not open to Biology majors)**(Prereq. 18.131, 18.132)*

Physiology of excitable cells and tissues: nerve and muscle, synapses, muscular contraction, neuromuscular reflexes, autonomic nervous system. Circulation: fluids, the heart, cardiovascular regulatory mechanisms.

18.144 Human Physiology II

4 Q.H.*

*(Not open to Biology majors)**(Prereq. 18.143)*

Respiration, endocrinology and metabolism, gastrointestinal function, renal function, sensory physiology and higher nervous function.

18.145 Human Anatomy and Physiology I 4 Q.H.**(Not open to Biology majors)*

Lecture—structure of the human organ systems. Physiology of muscle and of the nervous system; control of voluntary movement, autonomic control, sensation. Laboratory—anatomy, based on dissections of a representative mammal and comparison with human models; microscopic anatomy of selected organs.

18.146 Human Anatomy and Physiology II 4 Q.H.**(Not open to Biology majors)**(Prereq. 18.145)*

Lecture—human physiology based on the concept of the homeostatic state; functions of the blood and circulatory systems; immunity, digestion, nutrition, respiration, excretion, reproduction, endocrine controls of the preceding processes. Laboratory—experiments demonstrating selected physiological phenomena in humans or representative animals.

18.148 Human Anatomy

4 Q.H.*

(Not open to Biology majors)

The structure and development of the human body.

18.158 Vertebrate Physiology I

4 Q.H.*

(Prereq. 18.131-18.133, 18.136)

Properties of living protoplasm; the general organization and function of cells; translocation of materials and the organization of animals; the

physiology of the skeletal systems of man and animals; the physiology of amoeboid, ciliary and contractile movement with emphasis on muscle metabolism; the structure and function of neurons, reflex arcs, the autonomic nervous system, and the sensory receptors.

18.159 Vertebrate Physiology II 4 Q.H.*
(Prereq. 18.158)

Fluid media of animals, emphasizing water and electrolyte balance and kidney function in man; the physiology of blood, including its formation, functions, clotting antigens and tests for identifying blood; the physiology of the heart, nervous control of the vascular system, breathing and gas transport, heat regulation, nutrition, digestion and assimilation; the endocrine secretions, and the physiologic aspects of reproduction.

18.206 Evolution 4 Q.H.**
(Prereq. 18.131-18.135)

A basic evolutionary course for biology majors and graduate students. A survey of evolutionary history, evidence, mechanisms, and theories. Topics of current interest in evolution will be emphasized.

18.207 Vertebrate Zoology 4 Q.H.*
(Prereq. 18.131, 18.134)

Lectures emphasize the systematics, natural history, zoogeography, and behavior of all classes of vertebrates. The laboratory consists of identification of preserved specimens and mandatory field and museum trips.

18.208 Comparative Vertebrate Anatomy 5 Q.H.*
(Prereq. 18.131 and 18.132)

Morphology and phylogeny of the vertebrates; laboratory studies on taxonomy of the group and specific morphology of the dogfish shark, the mud puppy, the alligator, and the cat.

18.209 Embryology 5 Q.H.*
(Prereq. 18.131, 18.132, 18.135)

Gametogenesis, fertilization, cleavage, gastrulation, induction, organogenesis, and metamorphosis in vertebrates. Emphasis on frog, chick, and pig in the laboratory.

18.210 Invertebrate Zoology 5 Q.H.*
(Prereq. 18.131-18.133)

Functional morphology, systematics, ecology and phylogenetic relationships of the major invertebrate phyla. Emphasis in laboratory on utilization of living marine forms, with dissection of representative organisms.

18.211 Parasitology 4 Q.H.*
(Prereq. 18.131, 18.136)

Symbiotic relationships of protozoans, mesozoans, flatworms, nematodes, acanthocephalans, and arthropods.

18.212 Vertebrate Paleontology 4 Q.H.*
(Prereq. 18.131, 18.132, 18.134, 18.135 or permission of instructor)

Evolution of the vertebrates, including man, as

revealed through the fossil record. Laboratory, museum, and field studies.

18.213 Mammalogy 4 Q.H.*
(Prereq. Biology core or permission of instructor)

Phylogeny, anatomy, physiology, and natural history of the mammals. Field collection, laboratory preparation, and study of specimens will be included.

18.216 Herpetology 4 Q.H.**
(Prereq. 18.132, 18.135)

Lectures emphasize the natural history, behavior, systematics, and zoogeography of recent amphibians and reptiles. The laboratory consists of identification and preparation of preserved specimens, particularly local amphibians and reptiles. Mandatory field trips.

18.220 General Microbiology 5 Q.H.*
(Prereq. Permission of instructor or 12.145, 18.135, or 18.136; required courses may be taken concurrently)

Morphological, ecological, and biochemical consideration of representative groups of bacteria; introduction to virology and microbial genetics; host-parasite relationships including basic immunological considerations; procaryotes of medical significance; physical and chemical controls of microbial growth.

18.221 General Microbiology 3 Q.H.
(Prereq. Permission of instructor or 12.145, 18.135, or 18.136; required courses may be taken concurrently)

Same as 18.220, but without laboratory. Not applicable for the Biology major or graduate credit.

18.222 Medical Virology 4 Q.H.*
(Prereq. 18.220)

Fundamental characteristics of animal viruses with emphasis on pathogenesis, clinical pathology and epidemiology of the common viral diseases, including the tumor viruses and the slow viral diseases. Laboratory sessions will focus on methods of working with animals, eggs and cell cultures in isolating, cultivating and identifying viruses.

18.223 Medical Virology 3 Q.H.*
(Not open to Biology majors)
(Prereq. 18.220)

Fundamental characteristics of animal viruses with emphasis on pathogenesis, clinical pathology and epidemiology of the common viral diseases, including the tumor viruses and the slow viral diseases. Same as 18.222, but without laboratory.

18.227 Animal Histology 4 Q.H.
(Prereq. 18.132)

Microscopic study of fundamental types of animal tissues.

*Lab fee required.

**Including lab.

- 18.228 Histological Technique** 3 Q.H.*
(Prereq. 18.131, 18.136)
General methods of tissue preparation for purposes of microscopic study; preparation of solutions and stains; the microtome and its operation, together with specific directions for fixation, clearing, hardening, embedding, section-cutting, and staining tissues.
- 18.231 Lower Plants** 4 Q.H.*
(Prereq. 18.133)
Study of non-vascular plants (algae, fungi, lichens, mosses, and liverworts), including their morphology, ultrastructure, ecology, life cycles, reproductive strategies, and economic uses.
- 18.232 Higher Plants** 4 Q.H.*
(Prereq. 18.133)
Study of vascular plants (club mosses, ferns, gymnosperms and angiosperms). Origin, ecology, development, structure, paleobotanical evidence, reproductive strategies, and economic uses. Field trips included.
- 18.234 Plant Anatomy** 4 Q.H.*
(Prereq. 18.133)
Comparative developmental anatomy of seed plants.
- 18.235 Economic Botany** 4 Q.H.*
(Prereq. 18.133)
Structure, distribution, and cultivation of economic, food, and medicinal plants, including those producing fibers, sugars, starches, rubber, gums, spices, and beverages.
- 18.236 Horticulture** 4 Q.H.*
(Prereq. 18.133 or equiv.)
Basic cultivation methods for ornamental and food plants. Offered at the University Greenhouse.
- 18.237 Introduction to Plant Physiology** 5 Q.H.*
(Prereq. 18.133)
Physiological processes in plants at the cellular and organ levels, including water relations, mineral nutrition, photosynthesis, respiration, protein and fat synthesis, growth, hormones, and development.
- 18.238 Local Flora** 4 Q.H.*
(Prereq. 18.133)
A study of local vascular flora (ferns, gymnosperms, and angiosperms), with emphasis on recognition and appreciation of plant family characteristics. Preparation of herbarium specimens is presented. Field trip attendance is required.
- 18.239 Terrestrial Ecosystems of North America** 4 Q.H.*
(Prereq. 18.133 or permission of instructor)
The major ecosystems of North America are examined, with emphasis on species diversity, productivity, origin, history, and geographical location. Primary emphasis is placed upon vegetation. Field trips are required and will be arranged with students after the first class meeting.
- 18.240 Microbial Physiology** 4 Q.H.*
(Prereq. 18.220 or equiv.)
Structure and function of the bacterial cell, with emphasis on its general properties as well as the physical and chemical factors which influence it.
- 18.242 Medical Microbiology** 4 Q.H.*
(Prereq. 18.220 or equiv.)
The bacterial cell as a pathogen, stressing major genera of disease-producing organisms and factors influencing virulence.
- 18.243 Medical Microbiology** 3 Q.H.
(Not open to Biology majors)
(Prereq. 18.220 or permission)
Host-parasite interactions—virulence, toxins, natural flora, immunological responses, characteristics of the common bacterial, rickettsial, and protozoal infections in men. Epidemiology, pathology, vaccines and chemotherapy.
- 18.245 Serology-Immunology** 3 Q.H.
(Prereq. 18.220 or equiv.)
Basic consideration of the physical and chemical attributes of antigens and antibodies. Antigens of biological significance as well as in-vivo antigen-antibody interactions will be discussed.
- 18.246 Serology-Immunology Laboratory** 2 Q.H.*
(Prereq. or Coreq. 18.245)
Laboratory exercises dealing with immunization, quantitative antigen-antibody reactions, electrophoretic studies (agar, acrylamide gel, and cellulose acetate), immuno-fluorescence.
- 18.248 Marine and Fresh Water Microbiology I** 2 Q.H.*
(Prereq. 18.220)
Methodological approaches to the study of the aquatic environment. Shipboard sampling and relevant field-trips augment laboratory studies.
- 18.249 Marine and Fresh Water Microbiology II** 2 Q.H.
(Prereq. 18.220)
Characterization and differentiation of aquatic micro-organisms. Microbial associations in marine, estuarine, and fresh water habitats. Morphology, physiology and ecology are stressed.
- 18.251 Comparative Animal Physiology** 4 Q.H.*
(Prereq. 18.132, 18.136 or equiv.)
Study of animal functions, their control by humans, and their adaptivity in various environments. Consideration of phylogeny of these adaptations and of their underlying cellular mechanisms. Emphasis on invertebrates and lower vertebrates, with comparisons to mammals.
- 18.260 Advanced Cell Biology** 4 Q.H.*
(Prereq. 18.136, physics)
Selected topics in cellular structure and function of eukaryotes, e.g., their electrical and mechanical characteristics and the underlying physical and biochemical processes. Topics will vary depending upon the instructor.

18.280 Senior Seminar 1 Q.H.
(Prereq. Completion of Biology core, 18.131-18.136)

Recent developments in various topics of zoology, microbiology, physiology, botany, ecology, genetics, and cell biology. Student presentation and analysis is emphasized. Limited to qualified juniors and seniors in the B.A. program and required of seniors in the B.S. program.

18.290, 18.291 Directed Study (each) 2 Q.H.
(Prereq. Completion of Biology core, 18.131-18.136)

Independent work on a chosen topic under the direction of members of the Department. Limited to qualified juniors and seniors with approval of the Department and special arrangements with the supervising faculty member. The two quarters of this course together are counted as one elective course in the Biology Department.

18.295, 18.296, 18.297, 18.298 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

Psychology

For specific scheduling information, students should request a current course listing at the main office of the Psychology Department, 232 UR.

Students should note that course numbers below are sometimes presented out of numerical sequence, to reflect subject areas and levels of study.

19.105 Foundations of Psychology I 4 Q.H.
Topics include the observation of behavior, classical and operant conditioning, clinical applications of learning theory, sensation and perception, the physiological substrata of behavior. The basic principles of psychological analysis are taught by a personalized interactive method, using videotapes, progress quizzes, one-to-one study tutorials. Students can study at their own pace, within flexible calendar limits, proceeding to a new unit when the prior unit has been mastered.

19.106 Foundations of Psychology II 4 Q.H.
(Prereq. 19.105)

A continuation of 19.105, featuring a sequence of graded reading assignments and tutorial sessions, with frequent self-evaluation of study progress. Topics include analysis of behavior as applied to education, personality and behavior disorders, brain damage and language, sensory processes, ethology and aggression, and social psychology.

19.120 Statistics in Behavioral Science I 4 Q.H.
Introduction to descriptive statistics (scales of measurement, frequency distribution and graphs, measures of central tendency, dispersion and correlation, standard scores and the unit normal curve), and probability theory (permutations, combinations and the binomial theorem). This "self-paced" course features a

tutorial system that encourages the most advanced students to join in the teaching process by working with the rest of the class as "peer-tutors." Sequence of carefully constructed work-problems. Students proceed to a new unit when the prior unit has been mastered.

19.121 Statistics in Behavioral Science II 4 Q.H.
(Prereq. 19.120)

General presentation of hypothesis testing, including parametric and nonparametric tests, with emphasis on formulating hypotheses and choosing appropriate scales of measurement, tests, and confidence levels. (Continuation of 19.120 with the same format.)

19.130 Social Psychology 4 Q.H.
(Prereq. 19.106 or permission)

Introductory survey of social psychology. Topics to be covered include aggression, attribution, attitude formation, change, measurement, conformity, impression formation, group processes (social facilitation, deindividuation, etc.).

19.133 Laboratory in Social Psychology 4 Q.H.*
(Prereq. 19.121 and 19.130)

Introduction to the methods of social-psychological research. The purpose of the course is to assist students in developing the ability to read published social research with a critical eye, to pose questions in a testable manner, to apply experimental methods to social research, and to express themselves in APA journal style.

*Lab fee required.

- 19.135 Personality I** 4 Q.H.
(Prereq. 19.106)
Systematic study of the normal personality and its development. Topics include behavioral, dynamic, and constitutional determinants, assessment of personality, research, and a survey of the major theories of personality.
- 19.136 Personality II** 4 Q.H.
(Prereq. 19.135)
Continuation of 19.135.
- 19.138 Laboratory in Personality** 4 Q.H.*
(Prereq. 19.121 and 19.135)
Introduction to the methods and areas of personality research. Includes a discussion of problems of measurement, control, and interpretation. Representative published experiments will be examined critically. Students will design, collect data for, assess, and write up several experiments, including one original research project.
- 19.141 Human Behavioral Development I** 4 Q.H.
(Prereq. 19.106)
Various approaches to the study of human development (from the baby diary to the experiment) are examined. Includes study of biological bases of behavioral development, sensory and motor function, learning, socialization, speech and language, imitation, dependency, aggression, and abnormalities of development. The general heredity/environment question is studied and gives rise to assessment of twin studies and selective breeding experiments. A personalized course in which students progress at their own rate, with frequent evaluations of progress, immediate feedback, and tutorial assistance.
- 19.142 Human Behavioral Development II** 4 Q.H.
(Prereq. 19.141)
Continuation of 19.141 with emphasis on adolescence and adulthood.
- 19.143 Child Language** 4 Q.H.
(Prereq. 19.155)
A study of the manner in which language develops in children.
- 19.149 Sensation I** 4 Q.H.
(Prereq. 19.106)
Introduction to the study of our senses, with emphasis on hearing, touch, taste, and smell. Students have the opportunity to learn how we measure our sensory abilities. Findings are closely related to the functioning of sensory organs—ears, skin, mouth, and nose—and of the sensory nervous system. The course is built around one lecture-demonstration a week plus a textbook and study guide. Students are expected to pass mastery quizzes and work closely with peer-tutors in a modified personalized system of instruction.
- 19.150 Perception** 4 Q.H.
(Prereq. 19.106)
A study of our awareness of the world around us exemplified primarily by visual perception. Topics will be explored in group discussions, and include light, visual sensory mechanisms, color vision, illusions, consciousness, and dreams.
- 19.151 Bilingualism** 4 Q.H.
Studies from all the language sciences will be drawn upon to present bilingualism and its implications for the individual, the society, and the educational process. A linguistic presentation of diverse types of interference (phonetic, grammatical, and lexical). A psycholinguistic description of the bilingual individual (compound vs. coordinate bilinguals, case switching, predominance of one language). A socio-linguistic approach to bilingualism (majority vs. minority languages, language loyalty, group identification and mono- and biculturalism). Illustrations include the English-French, English-Spanish and English-Sign bilingual populations in the United States.
- 19.152 Introduction to Phonetics** 4 Q.H.
An introduction to the nature of the speech signal from an articulatory, perceptual, and acoustic point of view. Sound measurement, sound classes, and a survey and comparison of speech sounds used in languages in the world. Stress, tone, and intonation. Phonetic classification and transcription of speech as practical tools for students of languages, linguistics and speech and hearing science.
- 19.155 Introduction to Language and Cognition** 4 Q.H.
(Prereq. 19.106)
This course provides a basic introduction to the human cognition (cognitive psychology) and the psychology of language (psycholinguistics). On the subject of cognition, the course emphasizes the mental processes involved in the acquisition, organization, and use of knowledge, including pattern recognition and memory. On the subject of psycholinguistics, it focuses on the nature and structure of language, various theories of man's production and perception of language, and related experimental findings.
- 19.156 Thought Processes in Children** 4 Q.H.
(Prereq. 19.106)
Introduction to the processes of thinking, from infancy through adulthood. Specific topics to be considered include sensory-perceptual development, problem solving, concept attainment, and the development of social and cultural perspectives.
- 19.157 Cognition** 4 Q.H.
(Prereq. 19.155)
Continuation of 19.155, focusing on cognition. Emphasizes the analysis of perception, memory,

and learning within an information-processing framework. Also considered are selected topics in cognitive development.

19.158 Cognition Laboratory 4 Q.H.*
(Prereq. 19.121 and 19.157)
Experiments related to topics in 19.155 and 19.157.

19.160 Experimental Design in Psychology 4 Q.H.*
(Prereq. 19.106 and 19.121)
Concentration upon the experimental method in the design, execution, analysis and reporting of psychological investigations of humans and animals.

19.162 Sensation and Perception Laboratory 4 Q.H.*
(Prereq. 19.121 and 19.149 or 19.150)
Experiments involving precise measurements of both physical and psychophysical phenomena, including auditory function, color vision and after-effects, muscular sensation, tactile sensitivity, and adaptation to perceptual distortions.

19.163 Learning 4 Q.H.
An introduction to the principles of learning theory.

19.164 Learning and Motivation 4 Q.H.
(Prereq. 19.106)
Application of basic behavioral principles to behavioral development, behavior modification, language development, and programmed learning, and their relations to theoretical considerations in the learning process.

19.165 Learning and Motivation Laboratory 4 Q.H.*
(Prereq. 19.121 and 19.164)
Through direct experience, students gain proficiency in laboratory analysis of behavior and in evaluating common generalizations about human behavior. Students design and perform experiments in animal and human learning, memory, decision processes, concept formation, and other topics of individual interest.

19.166 Introduction to Programmed Learning 4 Q.H.
(Prereq. 19.164)
Development of programmed instruction has been one of the products of basic behavioral research. After students master relevant basic research literature, they are expected to review and evaluate existing instructional programs in light of the underlying behavioral principles. Programs to be examined are selected from those useful in the normal and special education classrooms, i.e., complex academic subject matter and individual problem areas.

19.167 Applied Programming Techniques 4 Q.H.
(Prereq. 19.166 and permission of instructor)
Students design, test, and evaluate their own instructional programs for teaching specific subject matter, for remedial application to behavior problems, or for testing basic instructional theory.

19.168 Behavior Change in Institutions 4 Q.H.
(Prereq. 19.106)
Study of successful projects which have provided effective remediation and rehabilitation in institutions for the mentally ill, the mentally retarded, and the developing human (schools).

19.169 Learning and Motivation II 4 Q.H.
(Prereq. 19.164)
Continuation of 19.164 with emphasis on biological constraints on learning, i.e., punishment, anxiety, aggression, addiction, and other topics of individual interest.

19.170 Language Abnormalities 4 Q.H.
(Prereq. 19.155)
Psycholinguistic methods and findings in the study of aphasia, stuttering, dyslexia, language of the retarded, and other language pathologies.

19.171 Behavior Modification Laboratory 4 Q.H.*
(Prereq. 19.165 and permission of instructor)
Students participate in education and training of severely and profoundly retarded residents at the Walter E. Fernald State School. Learning theory principles are applied to teaching new skills and to treating inappropriate behavior. Students have the opportunity to write individual and group training programs, implement them in a classroom setting, and learn methods for evaluating program success.

19.172 Applied Behavior Modification 4 Q.H.
(Prereq. 19.171 and permission of instructor)
Continuation of 19.171.

19.178 Physiological Bases of Psychology I 4 Q.H.
(Prereq. 19.106)
How nerves function and work together in the nervous system; how our sense organs provide the brain with information about the outside world; how the brain acts to produce externally observable behavior; and how such psychological concepts as perception, learning, motivation, arousal, and emotion may relate to nervous system activity.

19.179 Physiological Bases of Psychology II 4 Q.H.
(Prereq. 19.178)
Continuation of 19.178.

19.180 Seminar in Physiological Psychology 4 Q.H.
(Prereq. 19.179)
For students who desire intensive study, discussion, and practice in laboratory studies of physiological variables. Topics include evolution of the nervous system, sensory and motor mechanisms, motivation and emotion, sleep, attention and perception, learning, and memory.

19.181 Practicum in Physiological Psychology 4 Q.H.*
Laboratory experiments based on 19.180 discussion topics.

19.183 Biological Bases of Motivation 4 Q.H.

(Prereq. 19.179)

Focuses on the mechanisms of eating and drinking behavior, attention, sleep, arousal, and emotional behavior.

19.186 Comparative Psychology and Ethology

(Prereq. 19.106 and 19.178 or equiv. course in biology) 4 Q.H.

This introductory-level course in animal behavior surveys a wide range of species (reptiles, birds, fish, mammals—including humans) to find similarities and differences in the behavioral processes and physiological mechanisms by which individual organisms and species adapt to their environments. The first section of the course focuses on adaptive specializations exhibited by animals in learning about their environments during early development and as adults. The second section examines problems of social organizations at the individual level: how animals communicate with each other and transmit “cultural” skills; mechanisms underlying cohesion and dispersal (e.g., reproduction and aggression); and the adaptive advantages of being social or “asocial.” The final section provides the student with an unusual opportunity to apply concepts and experimental methods they have learned by actually doing a short field study of animal behavior at The Boston Zoological Park.

19.187 Sensory Physiology Seminar 4 Q.H.

(Prereq. 19.179)

Concentrates on the psychophysiology of various sensory systems, vision and hearing in particular. Discussions are concerned with the problem of accounting for sensory phenomena in terms of physiological concepts.

19.188 Sensory Physiology Laboratory 4 Q.H.*

(Prereq. 19.179)

Experiments performed to illustrate the physiological techniques in sensory psychology, including electrical recordings of some activities that accompany visual, auditory, and cutaneous activity.

19.189 Drugs, Brain, and Behavior

4 Q.H.

(Prereq. 19.179)

Examines from a psychobiological perspective, different experimental approaches to the problems involved in uncovering the relationships between changes in brain activity and changes in behavior produced by drugs. Material involves not only a general survey of the data collected with regard to drug/brain-behavior relationships, but also current theorizing on the role of early experience, environmental factors, biological rhythms, and other factors in the determination of drug-induced behavioral changes.

19.192 Sensory and Perceptual Abnormalities

(Prereq. 19.150)

4 Q.H.

Consideration of some of the peripheral factors which influence perception of the external world. Discussions consider the manner in which sensory deficits can influence behavior and some of the means of dealing with sensory and perceptual abnormalities. Application of programmed instruction to the development of sensory tests and remedial procedures for nonverbal people, blind or deaf retarded people, young children who have not yet learned to speak, and aphasic patients; the detection of hysterical sensory loss and malingering.

19.193 Neuroanatomy I

4 Q.H.

(Prereq. 19.106)

Aimed primarily at the study of the human nervous system. Study of the cellular structure of the nervous system, including a cell's organelles, followed by a short study of the embryological development of the nervous system. Systematic study of the nervous system beginning in the spinal cord and ending in the cerebral cortex with primary emphasis on fiber connections. A continuous attempt to correlate structure with behavioral activity.

19.194 Neuroanatomy II

4 Q.H.

(Prereq. 19.193)

Continuation of Neuroanatomy I. Students are expected to participate in individual reports on selected topics concerning the nervous system.

19.195 Laboratory in Psycholinguistics 4 Q.H.*

(Prereq. 19.121 and 19.155)

Provides students the opportunity to acquire first-hand experience in conducting research on problems in the psychology of language. Students are involved in all aspects of each experiment, including collecting and analyzing data and preparing reports. Classroom discussion focuses both on the particular experiments conducted and on the implications of the experimental findings for broader issues in the psychology of language.

19.201 Abnormal Psychological Survey 4 Q.H.

(Prereq. 19.106)

Study of the symptomatology, etiology, dynamics, and therapy of the abnormal personality. The basic varieties of neurosis and psychosis. Somatic therapies as well as fundamental varieties of psychotherapy.

19.202 Abnormal Psychology I

4 Q.H.

(Prereq. 19.135 or 19.141)

Study of the abnormal personality; criteria of psychopathology; anxiety and defense. Symptomatology, etiology, and dynamics of neuroses (hysteria, phobia, obsessions, compulsions) and of psychosomatic disorders. Detailed examination of case histories.

19.203 Abnormal Psychology II

4 Q.H.

(Prereq. 19.202)

Survey of psychological and somatic therapies. Symptomatology, etiology, dynamics, and therapy of psychoses (schizophrenia, paranoia, mania, depression). Sociopathic and organic disorders.

19.270 Seminar in Behavior Theory

4 Q.H.

Topics vary from term to term. For specific information, call ext. 3793.

19.271 Seminar in Cognition

4 Q.H.

Topics vary from term to term. For specific information, call ext. 3793.

19.272 Seminar in Language and Language Behavior

4 Q.H.

(Prereq. 19.155)

The seminar will focus on the role of phonology, syntax, and semantics in the perception and production of language, with discussions based on a number of recent papers in psycholinguistics. In the first part of the course, appropriate background material will be presented by the instructor. Next, each student will be responsible for presenting at least one paper on a topic of his or her choice. Subsequent to these presentations, will be a general discussion of the papers' implications for current models of the production and perception of language.

19.273 Seminar in Clinical Psychology and Personality

4 Q.H.

(Prereq. 19.135 or permission)

Seminar presentations of topics relevant to understanding the normal and disturbed personality. Possible topics: specialized assessment procedures, cognitive styles in personality, temperament, hypnosis, anxiety, aggression, specialized clinical syndromes, and the development of conscience.

19.274 Seminar in Sensory and Physiological Psychology

4 Q.H.

(Prereq. Permission of instructor)

19.275 Seminar in Social Psychology

4 Q.H.

(Prereq. 19.130 and 21.107 or permission)

Students are expected to examine and present in class their findings on a particular topic in social psychology. Topics may include attribution, aggression, conformity, attitude-behavior relationship, etc.

19.276 Seminar in Behavior Modification

4 Q.H.

(Prereq. 19.165)

Topics in behavior modification are discussed in a seminar format.

19.290, 19.291, 19.293, 19.294**Directed Study**

4 Q.H.

(Prereq. Permission of instructor)

Independent work under the direction of the Psychology Department, usually in a research project in one of the Department laboratories. Faculty members normally require completion of

advanced laboratory courses in the area of research interest, but this is a matter of individual discussion. Students interested in Directed Study should consult a departmental advisor.

19.295, 19.296, 19.297, 19.298, 19.299 Junior-Senior Honors Program

(each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

American Sign Language**19.132 Psychosocial Orientation to Deafness**

(Prereq. 19.196)

4 Q.H.

The status of deaf people as a linguistic and cultural minority group. Designed to provide both lay people and those experienced with the deaf an understanding of the various communication methods and the concomitant oral-manual controversy. Topics covered in class: the nature of sign language and its varieties, educational and historical treatment of deafness, and sociological and cultural make-up of the deaf community.

19.154 Linguistics of American Sign Language

(Prereq. 19.196 or consent of instructor) 4 Q.H.

A survey of the many issues raised by an examination of American Sign Language used by deaf people. A comparison of spoken and sign languages, emphasizing English and ASL; history of ASL; iconicity; description and transcription of sign; phonology and morphology of ASL signs; analysis of grammatical principles used in ASL and their exploitation of spatial and temporal properties; sociolinguistics of ASL and the deaf community.

19.196 American Sign Language I

4 Q.H.

Focuses on frequently used signs, basic grammatical rules, and the use of facial expression. Students are also introduced to the world of deafness, deaf people, and their culture.

19.199 American Sign Language II

4 Q.H.

(Prereq. 19.196 or consent of instructor)

Focuses on building receptive and expressive sign vocabulary, fingerspelling, use of the signing space, facial expression, and body postures.

19.200 Intensive ASL I

8 Q.H.

Combines the coursework of ASL I and ASL II into one quarter. This course is structured to accelerate the development of basic conversational skills in ASL.

19.204 Intermediate ASL I

4 Q.H.

(Prereq. 19.199 or equiv.)

In the third quarter of the conversational sequence, students work to further develop receptive and expressive skills in signing and fingerspelling. In particular, the course focuses on creative use of the visual modality in describing objects and environment.

19.205 Sign Language Interpreting I 4 Q.H.

(Prereq. 19.206 or consent of instructor)

First of the three-course sequence on theoretical and practical aspects of simultaneous interpreting of English to various forms of American Sign Language and vice-versa. Lectures, discussions, and role playing cover definitions, ethics, client-interpreter relations, linguistic considerations, mechanics, and special considerations for different interpreting settings. Laboratory exercises focus on developing skills for accurate and smooth interpreting. (Students may take 19.206 and 19.205 concurrently.)

19.206 Intermediate ASL II 4 Q.H.

(Prereq. 19.204 or consent)

The fourth quarter of the sequence in conversational American Sign Language consists of intensive work on expressive and receptive skills in stories and dialogues. Students work to solidify the skills learned in previous courses. (19.205 and 19.206 may be taken concurrently.)

19.211 Sign Language Interpreting II 4 Q.H.

(Prereq. 19.205 or consent of instructor)

This second course continues the topics of the first on a more advanced level. Increased laboratory work focuses on solidifying and increasing skills in simultaneous interpreting.

19.212 Sign Language Interpreting III 4 Q.H.

(Prereq. 19.211 or consent of instructor)

This third course continues discussions on variations of the topics covered in the previous courses. Laboratory work is structured to finalize skill development.

Teaching Practica

Students who have mastered one of the Department's self-paced courses may request permission to enroll in the correlated Teaching Practicum, with elective credit applicable to the major within limits noted in the major requirements handbook. Students have the opportunity to learn how to design instructional materials, give tutorials, and solve study problems in the subject matter of the self-paced course. The practica include a series of seminars and teachings on instructional techniques and problems.

19.100 Apprentice Teaching Practicum I 1 Q.H.

Students who complete a personalized-instruction psychology course (e.g., 19.105, 106, 141, 142, 120, 121, 149, 164) early in the quarter may be invited to assist in tutoring other students in the same course. Training and supervision guide this brief experience, and students may wish to move from this apprenticeship to more advanced teaching practica.

19.103 Apprentice Teaching Practicum II 1 Q.H.

(Prereq. 19.100)

A continuation of 19.100.

19.250 Teaching Practicum in Foundations of Psychology I 4 Q.H.

(Prereq. 19.105 and permission of instructor)

Designed to assist students in learning both practical teaching skills as well as theoretical principles associated with personalized instruction. Teaching responsibilities include interactions with students in 19.105 for four hours each week. In addition, a special Saturday conference and weekly staff seminars will help acquaint the undergraduate with relevant literature and provide opportunity for discussion.

19.251 Advanced Teaching Practicum in Foundations of Psychology I 4 Q.H.

(Prereq. 19.250 and permission of instructor)

Students who have mastered elementary teaching skills in 19.250 will have an opportunity to design and evaluate programming techniques which can be applied to college-level instruction. In addition to carrying limited tutorial responsibilities, each 19.251 student is expected to evaluate and assist the less sophisticated peer-tutor. Students will also direct seminar discussions of individually designed teaching programs based on representative samples of the programming literature.

19.252 Teaching Practicum in Foundations of Psychology II 4 Q.H.

(Prereq. 19.106)

Basic principles of PSI will be covered in a peer-tutor workshop during the first week of the quarter. Undergraduates are expected to apply these principles for the remainder of the quarter during personalized tutorial sessions with 19.106 students. In addition, students should demonstrate mastery of course material by retaking unit quizzes and the final exam. They will be encouraged to offer suggestions for modifying course material and procedures during weekly meetings with the course instructor. Tutors will be required to submit two five-minute, tape-recorded segments of actual tutorials for evaluation. They will also be required to write an evaluative essay on the PSI method of instruction.

19.253 Advanced Teaching Practicum in Foundations of Psychology II 4 Q.H.

(Prereq. 19.252 and permission of instructor)

In addition to tutoring, students are expected to assist new tutors, help other undergraduates who have special problems, and engage in study, research, and evaluation on instructional technology.

19.254 Teaching Practicum in Statistics in Behavioral Science I 4 Q.H.

(Prereq. 19.120 and permission of instructor)

Using the PSI approach, students have the opportunity to learn the principles of teaching introductory statistics and apply them by conducting a series of personalized tutoring sessions with others enrolled in 19.120.

19.255 Advanced Teaching Practicum in Statistics in Behavioral Science I 4 Q.H.

(Prereq. 19.254 and permission of instructor)
Students conduct a series of tutoring sessions in introductory statistics, assist new tutors, and deal with other undergraduates who have special problems. In addition, they may learn to design PSI material related to descriptive statistics, simple probability, correlation, and regression.

19.256 Teaching Practicum in Statistics in Behavioral Science II 4 Q.H.

(Prereq. 19.121 and permission of instructor)
Structured to assist students in learning the principles of the PSI system as applied to the teaching of inferential statistics. Students are expected to apply these principles concurrently by conducting a series of tutoring sessions with others enrolled in 19.121.

19.257 Advanced Teaching Practicum in Statistics in Behavioral Science II 4 Q.H.

(Prereq. 19.256 and permission of instructor)
Students conduct series of tutoring sessions in inferential statistics, deal with others who have special problems, and assist new tutors. In addition, they will be required to redesign one of the course units related to parametric or non-parametric statistical tests.

19.258 Teaching Practicum in Human Behavioral Development I 4 Q.H.

(Prereq. 19.256 and permission of instructor)
Students are expected to study, discuss, and apply the principles underlying the PSI method, conducting tutorials throughout the quarter. At weekly seminars, the course content and its relation to students' performances will be discussed, and changes in course content will be suggested and evaluated.

19.259 Advanced Teaching Practicum in Human Behavioral Development I 4 Q.H.

(Prereq. 19.258 and permission of instructor)
In addition to carrying limited tutorial responsibilities, each student is required to evaluate and assist new tutors, and expected to learn to design materials for teaching human behavioral development.

19.260 Teaching Practicum in Sensation I 4 Q.H.

(Prereq. 19.149 and permission of instructor)
Students attend a peer-tutor workshop during the first week of the quarter to review the basic principles of PSI. They are expected to apply these principles for at least two hours per week by tutoring others. The peer-tutor must maintain a log-book describing his/her activities, and will be encouraged to offer suggestions for modifying course material and procedures. These suggestions will be discussed with the course instructor at weekly peer-tutor meetings. Before the end of the quarter, each peer-tutor will be required to submit for evaluation a five-minute

tape recorded segment of an actual tutoring session, as well as a short, evaluative essay summarizing his/her experiences with the PSI system as applied to sensation.

19.261 Advanced Teaching Practicum in Sensation I 4 Q.H.

(Prereq. 19.260 and permission of instructor)
Peer-tutors assist new colleagues by helping in the tutorial workshop and by dealing with students in the course who have special problems (e.g., multiple quiz failures). Advanced tutors will also be required to re-design or revise one of the course units. After review by the course instructor, the new unit and quizzes will be tested in the course, and the tutor is expected to write an evaluative report on the unit's effectiveness as a teaching device.

19.262 Teaching Practicum in Perception 4 Q.H.

(Prereq. 19.150 and permission of instructor)
Same as 19.260 but with emphasis on visual perception.

19.263 Advanced Teaching Practicum in Perception 4 Q.H.

(Prereq. 19.260 and permission of instructor)
Same as 19.261 but with emphasis on visual perception.

19.264 Teaching Practicum in Learning Laboratory 4 Q.H.

(Prereq. 19.165 and permission of instructor)
Each student has the opportunity to learn to apply skills of peer-tutoring in the Learning Laboratory (19.165). By administering, evaluating, and discussing oral and written quizzes on laboratory methodology, report writing, and readings, tutors are in a position to provide students with immediate, daily feedback about their progress through each experiment. At weekly meetings with the instructor, each tutor must provide a written progress report for a subset of students, making written recommendations for specific students and for improvement of course content and design.

19.265 Advanced Teaching Practicum in Learning Laboratory 4 Q.H.

(Prereq. 19.264 and permission of instructor)
Students examine the theory of contingency managed instruction (CMI) as it applies to the Learning Laboratory (19.165). They are expected to supervise peer-tutors, critically examine the Learning Laboratory course in the context of the current CMI literature, and recommend changes in both course content and design.

19.266 Teaching Practicum in Learning and Motivation 4 Q.H.

(Prereq. 19.164 and permission of instructor)
Peer-tutors work with students in 19.164. Responsibilities include four hours of tutorial work per week on quizzes, readings, study guides and lab visits, and a one-hour tutors' meeting for reviewing course procedures and

content. Tutorial work is designed to help students prepare for weekly interviews with the instructor.

19.267 Advanced Teaching Practicum in Learning and Motivation 4 Q.H.

(Prereq. 19.266 and permission of instructor) Responsibilities are the same as those for 19.266, except that tutors are also expected to participate in revising course content and procedures and do advanced level readings that will be discussed at weekly tutors' meetings.

19.268 Teaching Practicum in Human Behavioral Development II 4 Q.H.

(Prereq. 19.142 and permission of instructor) Same as 19.258, but with emphasis on adolescence, adulthood, and senescence.

19.256 Advanced Teaching Practicum in Human Behavioral Development II 4 Q.H.

(Prereq. 19.268 and permission of instructor) Same as 19.259, but with emphasis on adolescence, adulthood, and senescence.

***Topics in Psychology Series (TIPS)**

General interest, no prerequisite courses in psychology.

19.148 Sleeping and Dreaming 4 Q.H.

What makes us dream? How important are sleeping and dreaming to physical and mental health? To assist students in understanding the nature of sleeping and dreaming, this course draws on findings and theory in psychology and neurophysiology.

19.230 Psychological Testing: Science and Politics 4 Q.H.

After an analysis of the basic principles of psychological test construction and the characteristics of various tests, the course focuses on the political and sociological problems associated with psychological assessment. Emphasis will be on the uses and misuses of tests: social, cultural, and racial issues in intelligence testing and the heredity-environment controversy in I.Q. testing.

19.231 Marriage and the Family 4 Q.H.

Problems typical in some marriages will be discussed, including alcoholism, sexual inadequacy and dissatisfaction, separation and divorce, death of a spouse, and child rearing.

19.232 Mind and Brain 4 Q.H.

The science of neuropsychology assumes that for every state of the mind—perceiving, thinking, dreaming, pleasure, pain, etc.—there is a corresponding brain state. This course will examine explorations of brain function that have increased our understanding of experience and behavior. Contemporary questions to be discussed include: 1) How is it that a single

human brain can store more information than all the libraries of the world can hold? 2) What kind of brain is needed to make language possible? 3) What is the impact of brain damage on states of mind? 4) Is the child's brain more plastic than that of the adult? 5) Do psychological disorders result from a disruption of the natural harmony between the brain's chemistry and its environment? 6) What is the nature-nurture controversy about? 7) How did brains and consciousness evolve? 8) Are there male and female brains?

19.233 Sports and Crowd Behavior 4 Q.H.

Millions of people attend sporting events each year. Why do they go? Why do fights start in the grandstands? Why do some people throw harmful objects at officials, players, and other spectators? Is attendance at sporting events an outlet for pent-up aggression or does it exacerbate aggression? Current research in social psychology and related disciplines will be examined and discussed to provide a background for analyses of these and other questions.

19.234 The Disordered Mind 4 Q.H.

This course may assist in providing an understanding of disturbed human behavior: how to recognize it, what causes it, and how to treat it. A wide range of disorders is discussed, from minor behavioral disturbances to neurosis, depression, and schizophrenia.

19.235 Animal Communication 4 Q.H.

How do animals communicate and how are we attempting to communicate with them? This course examines and compares the communication systems used by animals such as birds, bees, whales, dolphins, and the primates, including chimps and humans. From the four perspectives of biology, linguistics, psychology and sociology, recent attempts to teach other primates some of our languages (sign language, speech, manipulation of tokens or computers) are revealing what it means to be a human in the animal kingdom.

19.236 Man in Isolation 4 Q.H.

Children raised in the wilds, children isolated in society, and adults placed in experimental isolation, are the subjects of this course, designed to reveal what part of human nature actually requires other human beings, what part is programmed biologically, and how these work together to make us human.

19.237 The Young Offender 4 Q.H.

Antisocial behavior has identifiable causes that often lie in the environment. Understanding these causes may make it possible to create new environments to establish constructive social behavior. The same principles are extended to other forms of deviant and deficient behavior.

19.238 Behavior Problems and Their Therapies

4 Q.H.

This course offers a broad introduction to behavior therapies and their use in treating behavioral problems such as fears and phobias, compulsions, overeating, educational difficulties (including inattention and poor study skills), alcoholism, marital and family difficulties, and sexual deviation. Theoretical, practical, legal, and ethical issues will be examined.

19.239 Infant Development

4 Q.H.

In the last few years, new techniques have provided psychologists with a means of asking more precise questions about infants—and some of the answers have been truly remarkable. It is becoming increasingly apparent that the infant possesses highly-developed capacities and that its course of development involves a complex interaction between experience and these innate abilities. This course examines, in historical perspective, these new findings about infants, focusing on what is known about infancy and the various techniques used to study infant behavior. A number of aspects of development will be considered, including social, motor, perceptual, cognitive, and language.

19.244 Sexual Behavior

4 Q.H.

This course is concerned with the sexual activities of the human male and female from infancy to adulthood. It considers the importance of sexual factors in the life history of the individual, statistical surveys of sexual behavior, and direct observational measures of sexual responding. Included are the nature of love, responses to pornography, prostitution, bisexuality, male and female homosexuality, rape and child abuse, and sexual therapy.

19.245 Your Memory: How it Works

4 Q.H.

This course provides an analysis of the operation of memory in humans and animals, including factors from learning and physiology. Special attention is given to human verbal and conceptual memory, and classic and modern systems for memory extension and improvement. Practical exercises on methods of remembering are included.

19.246 Psychology and the Law

4 Q.H.

How does psychology enter into the various phases of the judicial process? The class will trace the effects of psychological factors through the course of a trial, including such issues as accuracy of eyewitness identification, plea bargaining, jury selection, persuasion tactics in the courtroom, presumption of innocence, jury size, jury decision rules, and sentencing and punishment.

19.247 Body Language

4 Q.H.

This course examines the messages we send by posture, facial expression, gesture, gait, and interpersonal distance, and goes on to consider various body language codes, such as sign languages.

19.248 Magic and Illusion

4 Q.H.

This course investigates visual, auditory, and kinesthetic illusions and constancies, demonstrating the manner in which we can be misled by our perceptions, and how professionals, such as magicians (who will demonstrate certain topics), take advantage of this fact.

19.249 Movement in Animals and Men

4 Q.H.

The physiological mechanisms of body movement and the ways in which the brain and spinal cord control these mechanisms will be described to help provide a general understanding of this crucial aspect of living. We will attempt to answer questions on how we walk, catch baseballs, drive nails, and how apparently frail people can mimic the strongest of weightlifters.

Anthropology

20.100 Introduction to Anthropology

(Formerly Principles of Social

Anthropology)

4 Q.H.

A survey of basic anthropological concepts, including human evolution, culture, and linguistics. Comparative analysis of such socio-cultural institutions as kinship, economy, polity, and religion, especially in non-western societies.

20.105 Visual Anthropology

4 Q.H.

(Prereq. 20.100)

A course exploring the anthropologist's use of film to gather information and analyze cultural subsystems. In addition to reading about and viewing films on particular peoples, a "laboratory" aspect of the course involving the use of tape and video equipment will introduce students to the field.

20.130 Language and Culture 4 Q.H.

The function of language in human society and an introduction to the relationship between the patterns of language and the patterns of culture.

20.131 Folklore 4 Q.H.

Cross-cultural comparisons of oral narrative traditions and literary sources. Various methods of analysis of folklore and its place and function in society and culture are examined. Identification of and methods for collecting material from local, currently active folklore traditions are given special attention.

20.132 The Anthropology of Music 4 Q.H.

The examination of music in a prehistoric and cross-cultural perspective, with emphasis on ethnomusicology and the comparison of western and non-western musical culture. Functions and social contexts of musical composition and performance; the ethnography of musical performance groups; the analysis of music as a form of communication.

20.135 Individual and Culture 4 Q.H.

An exploration of the ways in which individuals are shaped by society and the ways in which they can effect change.

20.137 Culture and Mental Illness 4 Q.H.

Discussions and analyses of the nature and meaning of culture, the role of culture in personality formation, culture and anxiety, anthropological approaches to the "normal" and the "abnormal," and the question, "Is mental illness psychological fact or cultural fiction?"

20.140 Evolution and Society 4 Q.H.

Human social and cultural evolution and the theories which account for it.

20.151 Aggression 4 Q.H.

Focuses on concepts of aggression and how they affect our understanding of human society. Draws on materials collected by anthropologists, psychologists, and ethnologists.

20.157 Primitive Religion 4 Q.H.

Nature and institutionalization of "primitive" religion. Exploration of religious concepts and movements in relation to social, economic, and political organization.

20.158 The Anthropological Study of Myth 4 Q.H.

Theories concerning the nature and meaning of myth. Exploration of the function of myth in social and cultural change. The structural analysis of myth.

20.160 Sex, Sex Roles, and Family 4 Q.H.

Analyzes popular and scientific notions about sex and family by examining the social patterning of interactions in our culture, other cultures, and other species. Emphasizes the changing relationships between men and women. (See also 21.121.)

20.170 Culture in Transition 4 Q.H.

Analysis of the changing patterns in social,

economic, and political institutions. Modern social trends are discussed.

20.210 Tribal Societies and Cultures 4 Q.H.

The structures and institutions of bands, tribes, and chiefdoms; comparative and functional studies of tribal societies and the dynamics of change under contact situations.

20.214 Peasant Society and Culture 4 Q.H.

Institutions of peasant society. The structure of traditional civilizations and the interrelations between urban and local communities; comparative and functional analysis of the peasant community and the dynamics of change from peasant to post-peasant and industrialized societies.

20.220 Anthropology Methods 4 Q.H.

Theory and practice of methods of field research and data analysis. Students take part in a field project.

20.230 Language and Communication 4 Q.H.

Human communication, including language, theories of the evolution of language; language and kinesics, semiotics, social class, linguistic nationalism; linguistic problems in modernization.

20.240 Human Origins 4 Q.H.

An intensive look at the data on fossil remains and contemporary primates which are essential for an understanding of human physical and behavioral evolution. Efforts are made to bring the student into direct contact with primary materials.

20.245 Cultural Ecology 4 Q.H.

An introduction to questions of human adaptation to environment and the effect of different adaptations on natural systems.

20.250 Political Anthropology 4 Q.H.

Origin and growth of the institutions of civilization. Specialization and social stratification in the dynamics of traditional civilizations; some special topics of contact and change.

20.252 The Anthropology of Law and Conflict 4 Q.H.

Settling disputes in stateless societies; forms and mechanism of social control; law as an indicator of cultural and social norms; the study of conflict resolution as an ethnographic tool. Some field research and analysis will be required.

20.255 Economic Anthropology 4 Q.H.

Types of economic systems in simple societies: reciprocal, redistributive, market exchange; economic relations as part of social relations; land-tenure systems, credit systems, savings mechanisms. The transition from subsistence to cash economics.

20.257 Religion and Myth 4 Q.H.

Nature and institutionalization of primitive, ancient, and contemporary religions. Exploration

of religious concepts and movements in relation to social, religious, and political organization.

20.259 Urban Anthropology 4 Q.H.
Selected problems in anthropological studies in urban societies.

20.260 Kinship and Society 4 Q.H.
This is a course for the advanced student only. A variety of kinship systems and their terminological and structural components, and the way in which their systems articulate with other social institutions.

20.270 Social Change and Economic Development 4 Q.H.
Selected studies of processes of transformation and modernization in non industrial societies.

20.280, 20.281, 20.282, 20.283, 20.284, 20.285, etc. (each) 4 Q.H.

Ethnographic area courses (New World Indian, African, Indian, Mediterranean, etc.) which will be offered as the Department's resources permit.

Sociology

21.100 Introduction to Sociology 4 Q.H.
Basic concepts and theories concerning the relationship between individuals and society. Emphasis on the influence of culture, social structure and institutions in explaining human activity. Social groups, socialization, community, class, power, and social change, among other substantive issues, will be discussed and analyzed.

21.103 Sociology of Boston 4 Q.H.
(Does not meet elective requirement for Soc./Anthr. major)

The city of Boston from the perspectives of environmental development, neighborhood and intergroup relations, institutional services, and symbolic meanings. The city is a laboratory for exploring the people's search for a lifestyle and the satisfaction of their needs. Field trips with workbook. Use documentary and literary sources for term paper report.

21.107 Social Psychology 4 Q.H.
(Prereq. 21.100 or consent)

A socio-psychological approach to individual behavior in social contexts; introduction to basic concepts, such as socialization, identity, self-concept, role conflict, attitudes and attitude measurement, and groups and group processes, as well as an overview of major theoretical orientations and important substantive topics.

21.109 The Sociology of Everyday Life 4 Q.H.
The development, application, and consequences of rules for everyday activities (e.g., walking, talking, eating, drinking, sitting, smoking, laughing, crying, and sleeping); the effects

20.290, 20.291 Directed Study 4 Q.H.
(Prereq. Department approval)

Independent work on a chosen topic under the direction of members of the Department. Limited to qualified seniors preparing in anthropology with approval of the Department Chairperson.

20.295, 20.296, 20.297, 20.298 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

20.801, 20.802 Theory
Qualified undergraduates may wish to take this graduate school course. Permission of the instructor is required for registration.

of space, equipment, and territory on these activities and on social life; and expressing emotions.

21.111 American Society 4 Q.H.
American society, culture, and major social institutions: economic, religious, governmental, familial, educational, welfare, and recreational; social classes and stratification, mobility, and individualism.

21.112 Sociology of Poverty 4 Q.H.
An analysis of American poverty in historical perspective, drawing on comparisons with other countries. Critical evaluation of sociological research and theories relating to poverty. Consideration of causes and effects of poverty, as well as societal responses to poverty and its consequences. Suitable for students in applied fields, such as nursing, criminal justice, education, allied health, pre-med, and pre-law.

21.116 Environment and Society 4 Q.H.
Traditional perceptions of environment and man, contrasting Judeo-Christian and other cultures such as Southwest American Indian and Japanese. Origins of the contemporary conservation movement and concern with resource management in America. Public policy and response to such environmental issues as population, air and water pollution, waste disposal, and land management. Environmental quality as ideology and the search for measurable indicators. Implication of international approaches to the understanding and control of ecosystems.

21.118 Population and Society 4 Q.H.

Traditional and contemporary approaches to human population and its control. Factors affecting birth and death rates. Societal implications of population quantity and quality in several situations, past and present. Rural-urban migration and mobility; racial, genetic, stratificational components for population analysis. Public policies and responses to fertility control in several societies. International efforts to understand and generate action on population issues.

21.120 Sociology of the Family 4 Q.H.

The family as a social institution in several selected cultures; interrelations of the family and political, economic, and educational institutions; social nature of personality; role taking; individualism, mobility, and industrialism.

21.121 Changing Sex Roles 4 Q.H.

Review and application of theories about the determinants of sex statuses and roles, from an historical and cross-cultural perspective. The focus of the course is on women's status roles in different institutional structures of American society.

21.122 Introduction to Women's Studies: Image, Myth, and Reality 4 Q.H.

The course provides an introduction to the study of women in society, helping to familiarize the student with the historical, political, economic, and social processes which have created both the image and reality of woman in contemporary society. An overview of the many different disciplinary approaches to the study of women.

21.125 The Sociology of Private and Public Assistance 4 Q.H.

Analysis of the functions of society's private and public assistance efforts. The socio-political, economic, and psychological factors in public welfare and the helping professions.

21.131 Crime, Conflict, and Justice 4 Q.H.

Analysis of social and political forces which create and perpetuate criminality in contemporary American society; the impact of criminality upon law enforcement, judicial process, and the social order. Particular attention is devoted to violence as a means of resolving problems. In addition, this course examines the legal system's involvement in processes of social conflict and change.

21.132 Class, Crime, and the Police 4 Q.H.

The relationship between social class and crime, including power elite theory; class conflict; mobility patterns and value orientations. White collar, professional, and "political" crime is discussed as is the relationship between economic status and the functioning of the criminal justice system. The role of police and the interaction between law enforcement agents and deviants is analyzed, with emphasis on the potential for discriminatory application of the criminal law.

21.135 Juvenile Delinquency 4 Q.H.

The sociological and psychological approaches to and their implications for a typology of delinquency; problems of prevention, treatment, and rehabilitation.

21.136 Violence in the Family 4 Q.H.

An examination of the physical, emotional and sexual violence which occurs in families, with particular emphasis on child and spouse abuse. Definitions, prevalence, causes, prevention, and treatment of specific cases of domestic violence will be analyzed. Social policy issues and problems of legal intervention are a primary focus.

21.137 Social Deviance I 4 Q.H.

The conditions under which people categorize others as different; processes by which persons so defined are assigned deviant status and assume appropriate roles and self-images; development of deviant careers and their relationship to deviant subcultures; situations in which people transform deviant identity.

21.138 Social Control I 4 Q.H.

Formation of social bonds and the conditions under which they are ruptured; the emergence of deviance as an interactional problem; individual and societal reactions to the most prevalent forms of deviant behavior. Analysis of agencies of social control, their definitions of problems and responses to typical clients.

21.139 Social Problems 4 Q.H.

(Prereq. 21.100 or consent)

Analysis of five major sociological perspectives on social problems (pathology, disorganization, value-conflict, deviance, and labeling); the conditions under which certain recurrent events, activities, and persons become redefined as social problems (e.g., mine disasters, marijuana smoking, and alcoholism); study of the typical responses to social problems and their consequences.

21.141 Drugs and Society 4 Q.H.

An introduction to the sociology of drugs. The course first examines social definitions of drugs, conditions of their use, and socialization into drug use. It then considers deviant drug use and effects of social control on definitions and use. A range of licit and illicit drugs will be considered, but major emphasis will be given to alcohol, marijuana, and heroin.

21.142 Sociology of Alcoholism 4 Q.H.

Social responses to deviant alcohol use. The course examines, in sequence, drinking cultures and drinking practices in the United States; processes by which people are labeled "alcoholics," and the role of agencies of social control, such as the criminal justice system and the health care system, in labeling and in rehabilitation.

21.145 Urban Society

4 Q.H.

The foundations of city life in historical perspective; relationship of city life to environment, population, social organization, technology, and cultural values; growth trends, urbanization, and urban planning.

21.146 Suburb and Metropolis

4 Q.H.

(Prereq. 21.100 or equiv.)

Ecology of suburban and metropolitan growth, impact on center city and rural fringe, emergent life styles and institutional forms. Compares interdependence, issues of identity, autonomy, and accessibility. Analysis of different types of metropolitan political, social, and economic institutions. Prospects for regional action.

21.150 Race and Ethnic Relations

4 Q.H.

(Prereq. 21.100 or equiv.)

Racial and religious groups, particularly with reference to the United States; special emphasis on historical development, specific problems of adjustment and assimilation, and specific present-day problems and trends.

21.151 Sociology of Prejudice

4 Q.H.

(Prereq. 21.100 or consent)

Factors in the development and maintenance of prejudice and discrimination. Topics include American race relations, anti-Semitism, sex roles, and stereotyping.

21.152 Race and Ethnic Relations: A World Perspective

4 Q.H.

(Formerly 21.152 Comparative Race/Ethnic Relations)

Cross-cultural analysis of race and ethnic relations in western and non-western societies. Explanations of race and ethnic relations in terms of contemporary developments, world problems, and ideological conflicts.

21.154 Sociology of Mental Health

4 Q.H.

(Prereq. 21.100 or equiv.)

A survey of sociological perspectives on mental health and mental disorder. Discussions, readings, and presentations explore the social history of mental illness, epidemiology, cross-cultural perspectives, parents' careers, social institutions of treatment, and policy implications. Areas of convergence between sociological concepts and psychiatry are examined.

21.155 Medical Sociology

4 Q.H.

(Prereq. 21.100 or consent)

An examination of the professions, training, institutions, and problems in health care, with an emphasis on those in the United States. Practical issues in the improvement of health care systems are considered.

21.156 Health Care as a Social Issue

4 Q.H.

(Prereq. 21.100 or consent)

The social and political dynamics of health care: who benefits from the system and defends it, who works for change, who wins and why. Topics include the social history of health care,

occupational politics, community power structure and the health care setting, the planning and delivery of health services to "haves" and "have-nots," and the role of citizens in determining the future of health care through activism, lobbying, legislation, and participation in controlling the system. Case examples will be provided.

21.157 Sociology of Human Service Organizations

4 Q.H.

An examination of the special problems of organizations dealing with people in any of the following capacities: healing, rehabilitation, education, guidance, maintenance, or imprisonment. Governmental, charitable, and profit-making agencies are studied. Topics include bureaucracy and red tape, the role of the professional in an organization, leadership strategies, dealing with clients, and developing referral procedures. Open to students interested in human services, health care, sociology, and organizational behavior.

21.158 Death and Dying

4 Q.H.

(Prereq. 21.100 or consent)

The treatment of death and dying, including problems faced by health care professionals, family members, institutions, the funeral industry, and the dying themselves. The course will discuss cross-cultural perspectives, the social distribution of mortality, the changing nature of death, and the ethical problems in determining life and death with particular attention to such issues as abortion, suicide, and ceasing medical intervention.

21.159 Aging and Society

4 Q.H.

A survey of issues and questions on aging, with special attention to social and economic consequences of the aging process, including retirement and productivity, health care problems, nursing home residences, widowhood, and the approach of death. Examples relating to aging in other cultures are presented in a search for new answers to social problems of aging in the United States. Students have the opportunity to learn to anticipate, cope with, and even prevent problems of aging that concern self, family, and clients/patients.

21.161 Social Inequality and Communication

4 Q.H.

Analysis of the ways in which groups and institutions, in both their ritual and everyday activities, communicate the idea of hierarchy and an individual's place in it, through face-to-face interaction, formal communication, and the use of space and time. A dramaturgical approach to social organization with special emphasis on status images in the media and the communication of social place by service organizations and professional groups. Includes some content analysis and observational fieldwork.

21.163 Students, Schools, and Society 4 Q.H.
(Prereq. 21.100)

Emphasis on the role of education in processes of socialization, social mobility, social control, and social change. Do social characteristics (sex, race, class, age, physical status) influence the school experience? Do schools provide opportunity and initiate change or do they perpetuate the status quo in economic, political, and social life? Who goes to school, where, for how long, and with what result? How does educational advantage or disadvantage get translated into jobs and social status? Students are encouraged to draw on their own experiences to develop paper topics.

21.164 Sociology of Work 4 Q.H.

Study of the world of work, focusing on the development of occupational cultures, the nature of careers, and the meanings and implications of professionalization. As part of the course, students will be encouraged to do a project on an occupation they are considering for a career or one in which they have had practical experience on co-op.

21.165 Sociology of Business/Industry 4 Q.H.

The role of industry in modern society; similarities and dissimilarities among industrial societies, bureaucracy and its alternatives, unions, supervision democracy and manipulation, the man on the assembly line, sabotage of the organization, and the role of wages and alienation.

21.166 Social Roles in the Business World 4 Q.H.

Analysis of the social structure of corporate and business life in contemporary America. Case studies from major accounting and/or industrial firms are presented and discussed. The "career line" in the world of business and management will be examined with a special focus on age/sex, racial/ethnic, and class/income barriers.

21.170 Sociological Perspectives on Consumerism and Consumer Behavior 4 Q.H.
(Replaces 21.167)

Analysis of consumer-oriented issues, including interest groups, needs, values, institutional networks, decision-making processes, and situational impacts. Exploration of systemic benefits and costs of consumer-relevant actions.

21.175 Technology and Society 4 Q.H.

Does society control technology or is technology directing society? Has technology become dehumanized? How valid is the doctrine of technological inevitability? Can the technological "fix" be viewed as a "solution" to social problems? Is technology itself a social problem? What can be expected of "technology assessment"? What of the back-to-nature and anti-technology movements today: are they the waves of the future? These are some of the questions and issues which are discussed and

analyzed. Students are expected to do considerable independent study and research.

21.176 Science and Society 4 Q.H.

Science has had profound effect on our society, and scientists have seen the ways in which political, economic, and social forces have guided developments in their fields. Issues such as "responsibility" and "autonomy" created by this interdependence will be explored. Emphasis is on the social structures within which science operates and is communicated, and science as an occupation and profession, as well as a system of thought and set of tools for producing knowledge.

21.180 Sociology of Religion 4 Q.H.
(Prereq. 21.100)

A comparative and analytic treatment of religion as a social institution, focusing on the relationships between religious organizations and other social institutions, with particular emphasis on the American experience. Religion as an agent of social change and stability is included.

21.185 Sociology of the Arts 4 Q.H.
(Prereq. 21.100)

An examination of the relationship between the social organization of society and the forms of art produced—the social role of the artist, how the arts are "manufactured" and distributed, the artistic consumer and his/her relationship to the art/artist, social support for the arts. Deals with a variety of art forms, emphasizing the performing arts.

21.200, 21.201 Group Behavior I and II 4 Q.H.
(Formerly **Group Behavior—The Sociological Imagination**)

How individuals interact in groups and how groups interact with each other. The reflexive self, social aspects of language, situational learning. Group perspectives, careers, institutions, and worlds.

21.207 Seminar in Social Psychology 4 Q.H.

Focus on the interaction of psychological and group processes. Students read original theoretical and research monographs in the field. Topics may include prejudice, reference groups, sex roles, conformity, leadership, aggression, communication, collective behavior, and achievement.

21.215 Collective Behavior 4 Q.H.

The rise of new group forms in response to persistent social unrest; study of masses, crowds, and publics; analysis of specific instances of collective behavior such as race riots, wildcat strikes, prison revolts, and campus disorders.

21.217 Mass Communication and Public Opinion 4 Q.H.

Topics include factors in the formation and development of public opinion, the effect of television on children, mass communication as social organization, media-depicted images of

society, the role of personal influence, the process of rumor, the use of mass media by the poor, propaganda analysis, and the latent and manifest functions of mass communication.

21.221 Seminar in Social Welfare 4 Q.H.
Discussion of problems in social welfare observed in the term between "Problems" and "Practicum." A research paper, based on directed field work in the intervening term, is the major course requirement.

21.231 Sociological Theories of Crime 4 Q.H.
Patterns and social forces involved in criminal behavior. Analysis of sociological theories of criminality and comparison of these to other explanations of crime.

21.236 Applied Sociology: Practice and Theory 4 Q.H.
An analysis of the conditions under which sociological knowledge is applied to social problems, the kinds of problems, and the degree of effectiveness of this application. Particular attention is paid to research and demonstration projects that derive from sociological theory.

21.237 Social Deviance II 4 Q.H.
An examination of the leading theories of deviance (anomie, subcultural deviance, labeling) and their principal variants; study of their assumptions, conceptions, propositions, and supportive evidence; analysis of empirical studies in each theoretical tradition.

21.238 Social Policy and Social Intervention (Formerly Social Control II) 4 Q.H.
Study of the formation of social policies in response to social problems; analysis of policy and problem, supporters and opponents of policy change, conditions under which control agencies adopt new policies, and effects of policy change. Particular emphasis on case studies of social action and legal change.

21.239 Introduction to Statistical Analysis 4 Q.H.
(Prereq. 21.100 or consent)
Application to social data of the principles of measurement, probability, measures of centrality, tests of significance, and techniques of association and correlation.

21.240 Research Methods I 4 Q.H.
(Prereq. 21.100 and 21.239 or consent)
Introduces students to the research process through an examination of the rules of evidence in empirical research and the place of values. Students have the opportunity to learn how to design and critique types of sociological research, how to collect qualitative and quantitative data, and how to sample populations.

21.241 Research Methods II 4 Q.H.
(Prereq. 21.100, 21.239, 21.240 or consent)
Students complete the research project begun in Research Methods I, practice coding, building indexes, scaling, table construction; introduction to use of the computer.

21.242 Qualitative Research Methods 4 Q.H.
An introduction to sociological fieldwork—methods of gathering data by extended observation and participation with people in natural settings. Students will take part in a series of observations designed to teach the basic skills of open-ended interviewing, observing, recording, and analyzing data. The theoretical base will be symbolic interaction.

21.243 Human Services Research and Evaluation 4 Q.H.
(Prereq. 21.239 or other statistics, 21.157, or permission)
Covers basic issues in applied research and the evaluation of services. Includes attention to the purposes of evaluation, ethics, formulating questions and measuring answers, designing evaluations and planning oriented research, the turbulent setting of action programs, and the utilization of evaluation results. Suitable for students majoring in Human Services, Sociology, Psychology, Nursing, Health Education and related fields.

21.245 Community Analysis 4 Q.H.
(Prereq. Consent or four soc./anthr. courses)
Ecological, social structure, identity, and social action aspects of human settlements. Deals with change and conflict at the community level.

21.246 Seminar in Urban Studies 4 Q.H.
(Prereq. 21.145 or consent)
Interdisciplinary approaches to urban studies are compared according to problem areas and research methods. Students have the opportunity to extend previous term paper projects after exposure to social action and social systemic theoretical perspectives.

21.250 Political Sociology: Who Gets What 4 Q.H.
(Prereq. Consent or four soc./anthr. courses)

An examination of formal political structures and informal quasi-political groups. Sociological analysis of ideology, class politics, mass movements, and the conflict of various social and economic groups as they vie for political power and influence.

21.255 Administration and Formal Organizations: People, Machines, and Bureaucracies 4 Q.H.
(Formerly **Sociology of Formal Organizations**)

Principles of formal organization. Theories of bureaucracy and concept of authority; communication systems and other conceptions of formal organization. Structure of work groups and their effect on the larger organization. The social content of organizations.

21.256 Comparative Health Care System I 6 Q.H.
An intensive look at the American health care system. The course is designed to afford upper-level undergraduate and graduate students the

opportunity to study the origins, development, and present state of health care in the United States. The course will involve lectures as well as field visits in the Boston area. In addition to the normal classroom activities, independent study will also be required.

21.257 Comparative Health Care System II 6 Q.H.
(Prereq. 21.256)

An intensive study of the British health care system. This course is designed to immerse students in the social and cultural context of British health care, involving field visits in London designed to demonstrate first-hand the planning, administration, and delivery of health services in Great Britain.

21.260 Social Stratification: Class, Status, and Power 4 Q.H.

(Prereq. Consent or four soc./anthr. courses)
Theories of social inequality, concepts of social class, aspects of status and role difference, criteria for social mobility.

21.265 Sociology of Occupations and Professions 4 Q.H.

(Prereq. Consent or four soc./anthr. courses)
The meanings of work. Division of labor and specialization. Analysis of occupational structure and patterns of recruitment, training, and career preferences. The classic professions and new trends in professionalization.

21.270 Class, Power, and Social Change 4 Q.H.

(Prereq. 21.100 and junior or senior standing in soc./anthr. or consent)

Theories of social equality and inequality as applied to the exercise of power, and the growth and development of social movements and group conflict, and as seen from the point of view of large-scale social change. *Required of majors.*

21.280 Classical Social Thought 4 Q.H.

(Prereq. Three soc./anthr. courses)
The development of sociology from the history of social thought. The emergence of several schools, beginning with Positivistic Organicism and Conflict Theory.

21.281 Current Social Thought 4 Q.H.

(Prereq. Three soc./anthr. courses)
A seminar-lecture course in which formalism, social behaviorism, social action theory, and functionalism are studied critically.

21.287 Senior Seminar 4 Q.H.

(Prereq. Senior standing in soc./anthr. or consent)

Opportunity to analyze, from sociological perspectives, student experience in work and voluntary service, and to develop and extend research interests related to that work or action experience.

21.288, 21.289, 21.290, 21.291 Directed Study (each) 4 Q.H.

(Prereq. Junior or senior standing in sociology or consent)

Independent work on a chosen topic under the direction of members of the Department. Limited to qualified students with approval of Department Chairperson.

21.292 Seminar in Current Emphases in Sociology: Writing and Talking in Sociology 4 Q.H.

(Prereq. Junior or senior standing in soc./anthr. or consent)

How these affect sociologists and the future of sociology. The class will consider prevailing modes of presentation in major journals and verbal presentation in teaching, consulting, etc. Class members will submit examples of their own writing for analysis.

21.293 Seminar in Current Emphases in Sociology 4 Q.H.

(Prereq. Junior or senior standing in soc./anthr. or consent)

Review and discussion of selected sociological topics.

21.295, 21.296, 21.297, 21.298 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

93.120 An Analysis of American Racism 4 Q.H.

A seminar in contemporary aspects of racism in America. The cycle by which racism in our institutions helps form our attitudes, and the ways in which our attitudes, in turn, shape our institutions, is studied and discussed. Emphasis is on the practical, day-to-day aspects of racism, rather than the theoretical and historical.

Political Science

22.110 Introduction to Politics 4 Q.H.

A broad-based introduction to contemporary political science. Areas covered include a consideration of basic concepts in political analysis (e.g., power, authority, and sovereignty); the role of governmental institutions in the making of public policy; public opinion and processes of

political representation; contemporary political ideologies; and the scope and methods of political science.

22.111 Introduction to American Government 4 Q.H.

An analysis of the American governmental and political processes, studying constitutionalism, liberties, institutions, and political behavior.

22.112 Introduction to International Relations

4 Q.H.

Elements of international relations, including sovereign power, and limitations on the behavior of nation-states; international law, diplomacy, the politics of international economic relations, and contemporary problems in international relations—peace and war, the arms race, detente, human rights, technology, population, and neoimperialism will be covered.

22.113 Introduction to Foreign Governments

4 Q.H.

A comparative study of parliamentary democracy in Western Europe, Communist totalitarianism in the Soviet Union, China, and Eastern Europe, and variations of these governmental systems in the "third world" countries of Asia, Africa, and the Middle East.

22.120 Conceptual Foundations of Contemporary Political Analyses

4 Q.H.

An introduction to the conceptual problems associated with the study of politics, including scientific method and a general overview of various methodological perspectives, i.e., systems theory, game theory, and survey analysis, as practiced by contemporary political scientists.

22.121 Research Methods I

4 Q.H.

(Prereq. 22.120)

An introduction to the principal quantitative methods used in political analysis, public administration, political behavior, international relations, and policy sciences. Emphasis on basic statistical techniques, survey methods, and SPSS programming.

22.122 Research Methods II

4 Q.H.

(Prereq. 22.121)

An intermediate course in quantitative analytic techniques with emphasis on practical problem solving in areas of concentration, particularly political behavior, policy sciences, public administration, and international relations. Will include intermediate statistical techniques such as multivariate analysis and causal modelling, using SPSS and drawing upon machine-readable data.

22.130 Politics and the Mass Media

4 Q.H.

(Prereq. 22.111)

Analyzes several facets of the mass media: the role of newspapers, radio, and television in public opinion formation; their use and effectiveness in political campaigns; their objectivity and/or bias in reporting "the news"; their impact on political parties; and the distribution of power between Congress and the President.

22.132 Political Behavior

4 Q.H.

(Prereq. 22.110)

Examines selected topics in contemporary political science from a political behavior perspective. Topics covered include political at-

titude formation and change, ideology, socialization, public opinion and voting behavior, political campaigning, political violence, and empirical democratic theory.

22.133 Political Parties and Pressure Groups

(Prereq. 22.111)

4 Q.H.

An analysis of political parties and pressure groups in the American political system, with attention given to policy making, elections, voting behavior, and state and national political trends.

22.134 The American Presidency

(Prereq. 22.111)

4 Q.H.

A behavioral examination of the nation's chief executive. The presidential electoral process, the president's many constituencies, and the differing styles of various twentieth-century presidents. The constitutional and extra-constitutional powers of the office, presidential relationships to Congress, the bureaucracy, and the judicial process.

22.135 American Constitutional Law

4 Q.H.

(Prereq. 22.111 and junior or senior status)

Employing excerpts of United States Supreme Court decisions and other reading materials, this course attempts an analysis of some of the theoretical, structural, and substantive issues inherent in and relevant to the American constitutional system.

22.136 American Legislative Process

4 Q.H.

(Prereq. 22.111)

A study of American national legislative structure, function, and behavior.

22.137 Civil Liberties

4 Q.H.

(Prereq. 22.136 or 22.131 and junior or senior status)

Employing United States Supreme Court decisions and other reading material, this course examines the substantive and procedural guarantees of the Bill of Rights and the Fourteenth Amendment and their relationship to a liberal democratic society.

22.139 American Ideology

4 Q.H.

An analysis of racism, nationalism, liberalism, and capitalism—four of the most profound American ideologies—from a behavioral perspective. Examination of the historic roots of each, its impact on the electoral and legislative process, and the attempt to accommodate the contradictions of each in the contemporary American political experience. An attempt to understand the on-going interaction of political ideology and the political process in American society.

22.141 State and Local Government

4 Q.H.

(Prereq. 22.111)

Introduces students to the political and administrative context of state and local government. Surveys the structure, function, and politics of states and localities within the context of the United States Federal system. (P.A. elective)

22.142 Introduction to Urban and Regional Planning 4 Q.H.

The historical influences on American urban and regional planning and the contemporary institutional, theoretical, and technical issues in planning. (P.A. elective)

22.143 Urban Metropolitan Areas 4 Q.H.
(Prereq. 22.141)

An analysis of the political, administrative, economic, and social dynamics of urban areas within an historical perspective. (P.A. elective)

22.144 Housing and Community Development 4 Q.H.

A review of historical metropolitan growth patterns and the influence of public policy on the development of American cities. Topics such as urban renewal, suburbanization of low and moderate income housing, and new communities are discussed. (P.A. elective)

22.145 Housing and Urban Renewal 4 Q.H.
(Prereq. 22.111, 22.143)

The technical, budgetary, intergovernmental, and social problems of housing and urban renewal.

22.146 Practical Politics 4 Q.H.
(Prereq. 22.111)

Designed to accentuate and systematically treat some of the problems of organizing for effective citizen action, partisan and nonpartisan, at the grass-roots level. An exploration of roles in political campaigning.

22.148 Sex Roles in American Politics 4 Q.H.

Explores the relationship between what is and what ought to be—and why—in the roles of women in American politics. Examines the traditional roles of women in politics, the suffrage movement, the woman as citizen and voter, the role of sex in achieving power and in political efficacy, and the place of women in "new politics." Political action to promote women's issues and modern feminism will also be covered.

22.153 European Parliamentary Systems 4 Q.H.
(Prereq. 22.113)

A comparative analysis of political culture, federal and unitary forms of government, and executive-legislative relations on the national level in England, France, and West Germany.

22.155 European Political Parties 4 Q.H.
(Prereq. 22.113)

Political party organization and voter behavior in England, France, and Germany with emphasis on party ideologies, strategies, campaigns, and elections, as well as socialization, recruitment, and participation of voters in the political process.

22.160 The Politics of Poverty 4 Q.H.

Concerned with what is referred to as the poverty system, i.e., how and why there is poverty, how it affects people's lives, and how it can be eliminated. As a discussion-centered course,

relying also on simulations, small group work, and experience-based learning, it will examine the relationships between poverty, racism, and the economic, political, and administrative systems. A number of alternatives will be evaluated and an opportunity provided for clarifying individual assumptions and feelings about poverty.

22.168 Human Services Administration 4 Q.H.

The ways in which human services are provided by the political, economic, and bureaucratic systems to low income citizens. Also designed to help students develop knowledge of the public policy process, human services organizations and delivery systems, and awareness of their values and potential as human services professionals. A discussion-based course for students interested in human services. (P.A. elective)

22.171 Law and Society 4 Q.H.

(Open only to upperclass, non-Political Science majors.)

Examination of the theory and practice of the American legal process and its impact on values. Also an analysis of the impact on these values of the military-industrial-technological complex.

22.173 Politics and Economic Problems 4 Q.H.
(Prereq. 22.111 or 22.177)

A survey of the relationship between economic developments and political processes in the United States. Among the topics considered are government planning of the economy, monopoly and government regulation, government programs to promote social welfare, and the impact of Federalism on the political-economic system.

22.175 Current Political Issues 4 Q.H.

An analysis of the constitutional and political background of selected contemporary public issues. Primarily for non-Political Science majors.

22.177 American Political Process 4 Q.H.

A general analysis of the American political system with emphasis on the topic of civil liberties. Not open to Political Science majors or anyone who has taken 22.111 (Introduction to American Government).

22.178 The Politics of the Criminal Justice System 4 Q.H.

(Prereq. 22.111 or 22.177)

The criminal justice system from arrest by police to appeal to the Supreme Court of the United States. The roles of police, lawyers, judges, prosecutors, juries, and correction officers will be examined.

22.179 World Politics 4 Q.H.

Examines political continuum and change in the international system by observing both traditional actors such as nation-state and modern actors such as multi-national corporations in relation to their goals and the means each uses

to attain them. Primarily for non-Political Science majors; not open to anyone who has taken 22.112.

22.183 Comparative Public Administration 4 Q.H.
A comparative study of the approaches to public administration in selected democratic governments in the United States and Europe.

22.220 The Politics of Imperialism 4 Q.H.
(Prereq. 22.112)

The political dynamics of penetration of foreign economies and foreign politics, considering such elements as military intervention, foreign aid, and the impact of the multi-national corporations.

22.223 American Foreign Policy 4 Q.H.
(Prereq. 22.111)

Formulation and conduct of foreign policy; role of the United States in politics since 1945.

22.225 Soviet Government 4 Q.H.
(Prereq. 22.113)

A study of Soviet political origins and behavior, with emphasis on recent changes in the party and state apparatus, the economy, and the administration of justice.

22.226 Soviet Foreign Policy 4 Q.H.
(Prereq. 22.113)

The evolution of Soviet foreign policy since 1917, with emphasis on the development of the international Communist movement and the onset of the East-West ideological conflict.

22.227 Communism in Eastern Europe 4 Q.H.
(Prereq. 22.113)

The Communist governments of Eastern Europe, with emphasis on their growing independence from Soviet Russia. Recent political change, economic liberalization, and new orientation in foreign policy.

22.228 Government and Politics in Africa 4 Q.H.
(Prereq. 22.113)

The governmental systems, political parties, socioeconomic problems, and foreign policies of selected states north and south of the Sahara.

22.231 International Organization 4 Q.H.
(Prereq. 22.112)

Development of international organizations, with special emphasis on the United Nations system. (P.A. elective)

22.233 International Law 4 Q.H.
(Prereq. 22.112)

Territory and jurisdiction of states, treaties, recognition, peaceful settlement of disputes, resort to force.

22.234 War and Its Prevention 4 Q.H.
(Prereq. 22.110)

Attempts a definition of war, examines the causes and kinds of war, and studies the suggested solutions to the problem of war.

22.238 Ethnic Conflict in International Perspective 4 Q.H.

A comparative study of ethnic conflict, with its religious, linguistic, racial, and economic roots in such places as Nigeria, Cyprus, Canada, Northern Ireland, Belgium, and the United States. World order implications and Great Power consequences of such confrontations will also be studied.

22.240 Totalitarianism and Dictatorship 4 Q.H.
(Prereq. 22.113)

An analysis of totalitarianism, dictatorship, and autocracy, including study of historical background, characteristics, theories of origin, nature, and significance; evaluation of techniques, ideologies (i.e., Marxism-Leninism), policies, and institutions. Particular attention is given to Soviet and German experiences.

22.242 The Politics of Revolution and Change 4 Q.H.
(Prereq. 22.113)

An analysis of revolution and change, contemporary and historical, with attention to both theory and practice. Topics discussed include major trends in contemporary politics and society, and the relationship between political change and technological, scientific, or social change.

22.243 Government and Politics of China 4 Q.H.

Government and party organization, socioeconomic problems and policies, concentrating attention on the influence of history, technology, and ideology as determinants of attitudes and behavior.

22.244 China's Foreign Relations 4 Q.H.

Examines China's traditional view of international relations and its modification first by contact with the West and later by Marxism-Leninism. The course investigates China's role in changing the international system to accord more with its perspectives on sovereignty and equality and the principles of socialist internationalism.

22.245 The Politics and Policies of Developing Nations 4 Q.H.

A survey of recent political and related change among third-world countries of Africa, Latin America, and Asia. Topics included are the heritage of colonialism and achievement of independence, the realities of cultural pluralism, revolution and political violence, institution building, political leadership and role of ideology, political parties, the military in politics, and the international aspects of political modernization.

22.247 Government and Politics of Latin America 4 Q.H.

The governmental systems, political parties, socioeconomic problems, and foreign policies of Latin American states. Focus will be on political change.

22.250 Government and Politics of Japan 4 Q.H.
(Prereq. 22.112 or 22.113)

Examines Japan's political development from the Meiji Restoration to the present, exploring the unique form of democratic government practiced in Japan and evaluating the effects of Japanese political theory, war, the American occupation, the Emperor, and Japanese political and cultural values on Japan's political institutions. Japan's present and future impact on the international system are also considered.

22.257 Government and Politics in the Middle East 4 Q.H.
(Prereq. 22.112 or 22.113)

Approaches the political, economic, military, and ideological factors within the Arab states and Israel, inter-Arab politics, the Arab-Israeli conflict, and the great power rivalry in the region.

22.259 Political Development in Revolutionary Societies 4 Q.H.
(Prereq. 22.112 or 22.113)

Examination of political development in selected revolutionary societies, including Cuba.

22.260 Public Policy Analysis 4 Q.H.
(Prereq. 22.111)

An analysis and evaluation of public policy in the United States.

22.261 Public Administration 4 Q.H.
(Prereq. 22.111)

Introduction to the theory and practice of public administration, with special emphasis on the generalities of institutions, processes, and behavior of bureaucratic organizations.

22.262 Organization Theory 4 Q.H.

Provides a broad overview of organization theories, their history, and development. Specific attention is given to developing a paradigm for public organizations which focuses on the relationships of economic, democratic, bureaucratic, technological, and humanistic imperatives. The student will prepare a research paper and consider the implications of this paradigm for future organizations.

22.263 Public Management 4 Q.H.
(Prereq. 22.261)

What problems are entailed in the management of public agencies? How do public managers seek to solve these problems? These questions will be explored through the use of descriptive, analytical, and case materials. (P.A. elective)

22.266 Public Personnel Administration 4 Q.H.
(Prereq. 22.261)

Designed to be an overall introduction to the field of public personnel administration. It includes examination of selected topics such as recruitment, selection, classification, care development, equal opportunity, public employee unionism, and collective bargaining.

22.267 Public Budgeting 4 Q.H.
(Prereq. 22.261)

Focuses on the function of budgeting in a variety of governmental contexts, specifically, the appropriations process, the budget as a management tool, and the public policy impacts of the budget. Budgeting techniques are emphasized within this context.

22.269 Governmental Accounting 4 Q.H.
(Prereq. 22.261)

Basic accounting principles and methods used by government agencies including the utilization and interpretation of financial statements, auditing, and the application of electronic data processing in government record keeping. (P.A. elective)

22.270 Political Theory 4 Q.H.
(Prereq. Junior or senior status or consent)

An analytic approach to the study of key political concepts: power, equality, freedom, authority, obligation, ethics, law, rights, punishment, state, sovereignty.

22.272 Selected Issues in Political Theory 4 Q.H.
(Prereq. 22.271)

Intensive examination of some dominant issues in modern political theory.

22.273 Political Thought I 4 Q.H.
(Prereq. Junior status or consent)

An analytical and historical examination of the great political thinkers and the main trends of political thought from the Grecian age to the Renaissance.

22.274 Political Thought II 4 Q.H.
(Prereq. 22.273)

An analytical and historical examination of the great political thinkers and the main trends in political thought from the Renaissance to the twentieth century.

22.276 American Political Thought 4 Q.H.
(Prereq. 23.211)

The contributions to political theory of the main social, economic, political, intellectual, and philosophic movements in America from the colonial period to the present.

22.278 Contemporary Political Thought 4 Q.H.
(Prereq. 22.101)

Analysis of current ideals, ideologies, and political movements, including existentialism, neo-Marxism, black power, women's liberation. The decline of ideology and behavioralism.

22.282 Seminar in American Government 4 Q.H.
(Prereq. Senior Political Science major and consent)

An in-depth study of selected topics in American government.

22.283 Seminar in International Relations 4 Q.H.
(Prereq. Senior Political Science major and consent)

An in-depth study of selected topics in international relations.

- 22.284 Seminar in Comparative Politics** 4 Q.H.
(Prereq. Senior Political Science major and consent)
An in-depth study of selected topics in comparative politics.
- 22.285 Senior Seminar in Political Science** 4 Q.H.
(Prereq. Senior Political Science major)
An in-depth study of selected topics in political science.

- 22.286 Research Seminar in Political Science** 4 Q.H.

The preparation of a research paper.

- 22.288 Seminar in Public Law and Social Issues** 4 Q.H.
(Prereq. Junior or senior and consent)
Examines some of the continuing and perplexing social problems through the media of legal writings and recent court cases. Issues to be discussed include abortion, euthanasia, family planning, criticism of public officials, political activism, the right of privacy, obscenity, racial and economic discrimination.

History

- 23.101 Western Civilization** 4 Q.H.
The major ideas and institutions of Western Civilization from ancient times to 1648.
- 23.102 Western Civilization** 4 Q.H.
A continuation of 23.101, covering the period since 1648.
- 23.108 Hitler's Germany (Group B)** 4 Q.H.
A study of the origins and nature of Hitler's Third Reich, emphasizing the personal lives of Nazi leaders in an attempt to understand how seemingly ordinary people could enthusiastically promote wars of aggression and revel in genocidal policies.
- 23.109 Population in European History (Group A or B)** 4 Q.H.
An application of the principles of demography to European history from Roman times to the present, with attention to the interaction of birth, death, marriage, and migration rates with climate change, epidemic disease, war, economic developments, social upheaval, and political policy.
- 23.110 History of European Morality (Group A or B)** 4 Q.H.
The norms of European public and private morality and the extent of adherence to these standards from ancient to modern times.
- 23.111 Ancient Greece (Group A)** 4 Q.H.
The origins and development of Greek civilization; political evolution of Hellenistic society from tribal to city-state organization; growth and application of Greek religious, political, and ethical ideas.

- 22.290, 22.291, 22.292, 22.293 Directed Study** (each) 4 Q.H.

Independent work on a chosen topic under the direction of members of the Department. Limited to qualified juniors and seniors majoring in Political Science, with approval of Department Chairperson and instructor.

- 22.295, 22.296, 22.297, 22.298 Junior-Senior Honors Program** (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

- 23.112 Ancient Rome (Group A)** 4 Q.H.
Roman civilization in two sequences: 1) the rise of Roman power under the Republic and 2) the decline of Roman power under the Empire.

- 23.113 History of the Papacy (Group A or B)** 4 Q.H.

The growth and extension of the religious, ethical, and political power of the bishops of Rome from the beginning of Christianity.

- 23.115 Medieval Europe (Group A)** 4 Q.H.
Europe from the barbarian invasions to the late thirteenth century; the expansion of Christianity and the institutionalization of church and papacy; the emergence of the Holy Roman Empire, England, and France as political units; social, cultural, and economic developments.

- 23.116 Europe in the Age of the Renaissance (Group A)** 4 Q.H.

Europe from 1300 to 1500, when alternatives to medieval institutions became increasingly apparent. Special attention to political, economic, and cultural changes in Italy and Northern Europe.

- 23.119 Europe in the Age of Reformation (Group A)** 4 Q.H.

Political, economic, social, and religious background of the Protestant and Catholic Reformations from 1500 to 1660. Emphasis also on the impact of the Reformation on Europe.

- 23.120 Europe in the Age of Reason (Group B)** 4 Q.H.

A survey of European history from 1660 to 1815, a time of great ferment climaxed by the French Revolution and Napoleon.

23.121 Nineteenth-Century Europe (Group B)

4 Q.H.

Europe during a century of dramatic transformation: the Industrial Revolution, the post-Napoleonic reaction; liberalism, socialism, nationalism, and imperialism.

23.122 Europe, 1870—1921 (Group B)

4 Q.H.

Europe from the Franco-Prussian War to the post-World War I settlement: the growing tensions and rivalries and declining certainties of the end of the nineteenth century, the origins of World War I, the War itself, the Russian Revolution, and the Peace of Paris.

23.123 Europe since 1921 (Group B)

4 Q.H.

Europe from the Versailles Settlement: the rise of totalitarianism, the Depression, the crises of liberalism and of the European mind, the Appeasement Era, World War II, the Cold War, the end of colonialism, and Europe today.

23.124 Early Modern France (Group A)

4 Q.H.

Intensive study of the political, economic, social, and intellectual development of France from the end of the Hundred Years' War through the reign of Louis XIV.

23.127 The French Revolution and Napoleon (Group B)

4 Q.H.

The history of France in the age of the *ancien regime* and the Enlightenment as background for the French Revolution and Napoleon.

23.130 England to 1688 (Group A)

4 Q.H.

Prehistoric Britain, the Anglo-Saxons, the Normans, the Plantagenets, the Tudors, and the Stuarts, with emphasis on the development of parliamentary institutions until the Glorious Revolution.

23.131 England since 1688 (Group B)

4 Q.H.

England from the Glorious Revolution to the present, with emphasis on the development of Parliament, the Industrial Revolution, nineteenth-century reaction and reform, the World Wars, and the rise of socialism.

23.132 Elizabethan England (Group A)

4 Q.H.

A study of the social, cultural, economic, and political developments of sixteenth-century England with special emphasis on the reign of Elizabeth I.

23.133 Stuart England (Group A)

4 Q.H.

England from 1603 to 1714, with emphasis on social and economic change and political revolutions.

23.135 Victorian England (Group B)

4 Q.H.

The economic, social, and political life of the English people during Victoria's reign.

23.137 England since 1900 (Group B)

4 Q.H.

The economic, social, and political life of the English people in the twentieth century.

23.138 Irish Civilization (Group B)

4 Q.H.

The history of Irish civilization from the earliest hero sagas and their impact on Irish values to

the Irish independence movement, the prototype and model for many other twentieth century liberation movements.

23.139 History of Modern Italy (Group B)

4 Q.H.

A survey of the social, economic, and political development of the modern Italian state from the seventeenth century to the present. Emphasis on the problem of modernization.

23.140 Imperial Russia (Group B)

4 Q.H.

The emergence of Russia as a recognized European power, westernization and expansion in the eighteenth century, the impact of Napoleon, reform and revolution.

23.141 Soviet Russia (Group B)

4 Q.H.

Forces molding the history of Russia since 1917, internal developments, foreign relations.

23.145 The Modern Middle East (Group D)

4 Q.H.

The Middle East since 1800, with emphasis on the background to present problems.

23.146 Contemporary Middle East (Group D)

4 Q.H.

Political, economic, and social developments in the Middle East since the end of World War II.

23.149 Imperialism (Group B)

4 Q.H.

The rise and fall of the European colonial empires with an emphasis on the period of the late eighteenth to the twentieth centuries. Attention to theories underlying imperial expansion and the impact of imperialism on colonies and colonizers.

23.151 Modern Africa (Group D)

4 Q.H.

The European impact on Africa, the rise of African nationalism, the emergence of independent African states, and the background of their present problems.

23.160 History of Science and Technology (Group A or B)

4 Q.H.

An interdisciplinary survey of the development of science and technology integrating theories of the philosophy and sociology of science within an historical framework. Emphasis is placed on the environmental and ideological conditions that contribute to the birth and growth of the various sciences and to the relationship between these conditions and technological innovation.

23.162 Technological Transformations of Society (Groups B, C, D)

4 Q.H.

The relationship between technological innovations and the world in which they take place. Discussion of conditions necessary for discovery and innovation. Impact of technology on political, economic, and social environments.

23.166 The Culture of Europe (Group B)
(Formerly **The Creative Matrix**)

4 Q.H.

An analysis of the culture of the West in the nineteenth and twentieth centuries focusing on the conjunction of social, cultural, and psychological forces that encouraged or retarded

creativity. Attempts will be made to show the interconnections among the arts, social sciences, and sciences within each of the periods covered.

23.172 Recent Leaders of Asia (Group D) 4 Q.H.
The lives and roles of recent leaders of Japan, China, India, and other Asiatic countries.

23.173 China since 1850 (Group D) 4 Q.H.
The history of China from the Opium War to the present, with emphasis on the concepts and policies of the Communist regime since 1949.

23.174 Japan since 1850 (Group D) 4 Q.H.
The history of Japan since its opening by the West. Emphasis on westernization, the rise of Japan as a world power, and the Japanese experience since the defeat in World War II.

23.176 European Urban History to 1850 (Group A or B) 4 Q.H.
A review of urban development from the Greeks through the emergence of the industrial cities of nineteenth-century Europe. Individual cities such as Rome, Paris, and London are given special study.

23.178 Health and Sickness: Historical Perspective (Group A or B) 4 Q.H.
A survey of medical theories, particularly theories concerning the courses of disease and the health care systems or institutions derived from them, from ancient times to the present. The medical theory and practice will be related to both the general history of the period and the particular political, economic, or social circumstances which influenced attitudes regarding health care.

23.180 History of Deviance in Western Europe (Group A) 4 Q.H.
An examination of individual and group behavior contrary to the accepted standards of the establishment (either in real or imagined ways) from the fifth through the seventeenth centuries. The kinds of deviance explored include heretical ideas, witchcraft, incest, promiscuity, burglary, theft, infanticide, homicide, lunacy, and riots. Explores societal attitudes toward deviant behavior and the kinds of law enforcement mechanisms (official and unofficial) employed.

23.182 Modern European Economic History (Group B) 4 Q.H.
Survey of the development of the Western world examined within the framework of economic theory, with attention to social and political ramifications.

23.184 Socialism and Revolution (Group B) 4 Q.H.
The history of socialism and revolution from the early nineteenth-century utopias to the New Left of the 1960s.

23.185 Revolutions (Group A or B) 4 Q.H.
A review of the important theories of revolution and an analysis of the major early modern and

modern revolutions, with a view to evolving a working theory of both political and generational revolutions for the twentieth century.

23.186 War in the Twentieth Century (Group B, C, or D) 4 Q.H.
An analysis of the causes, prosecutions, and effects of the major wars fought in the twentieth century. The course will concentrate on the First and Second World Wars and on the Vietnam War. Using film, simulations, and other materials, classes will explore the economic, social, cultural, and psychological impacts of these wars as well as their political, diplomatic, and material aspects.

23.187 Peacemaking (Groups A, B, C, or D) 4 Q.H.
This course focuses on the manner in which wars have been ended and peace maintained since the end of the wars of religion in the seventeenth century. Methods of war prevention such as balance of power, the Concert of Europe, and international law will be viewed in terms of their historical effectiveness. During the portion of the course focusing on the twentieth century, students will have the opportunity to participate in a war-prevention simulation.

23.188 History and Film (Group B or C) 4 Q.H.*
An exploration of various historical issues as seen through the eyes of historians and film makers. Both acted and documentary films are shown in combination with readings from a variety of source and interpretive materials.

23.189 Oral History (Group C) 4 Q.H.
This course focuses on the value of learning history from those who lived it. Students are expected to conduct tape-recorded interviews with people who can tell them about a selected aspect of twentieth-century history from firsthand experience.

23.195 Advanced Western Civilization 4 Q.H.
(Invitation of instructor of 23.101)
Students who demonstrate mastery of 23.101 through consistently superior work may be invited to work on an individual basis with their instructor. Together they will work out projects relating to the course.

23.196 Advanced Western Civilization 4 Q.H.
(invitation of instructor of 23.102)
Similar to 23.195 in relation to 23.102.

23.197 Women in European History (Group A or B) 4 Q.H.
An examination of the changing roles of women from Ancient Greece through the French Revolution.

23.199 The Historian's Craft 4 Q.H.
The ways in which the historian studies the past and the nature of historical statements. Problems considered include research techniques, changing conceptions of historical knowledge, and the relationship between the historian and the society in which he works.

*Lab fee required.

23.200 Social Science Methodology (Formerly Interdisciplinary Methods) 4 Q.H.

Introduction to social science methodology and quantitative techniques used in historical analysis.

23.201 Colonial America (Group C) 4 Q.H.

The discovery and exploration of the New World, the settlement of the English colonies on the North American mainland, their development to 1763, and the origin of their clash with England.

23.202 The American Revolution (Group C) 4 Q.H.

The coming of the American Revolution, its nature and progress, and its political, economic, and social aftermath.

23.203 Crime and Punishment: A History of the Criminal Justice System in America (Group C) 4 Q.H.

The evolution of the criminal justice system in the United States, with special emphasis on the impact of English common law, the changing role of law enforcement officers, reform movements, the female offender, the black experience, and the changing meaning of law and order in the United States.

23.207 History of the Professions (Group C) 4 Q.H.

The evolution of the classic professions of law and medicine in the nineteenth century and a study of the emergence of new professions in engineering, nursing, accounting, and social work. Themes include professional-client, professional-employer, and professional-governmental relations as well as education, professional organizations, and sex-stereotyping.

23.210 The United States to 1877 4 Q.H.

The history of the American people from 1763 to 1877, with an analysis of the American Revolution and the major political, constitutional, diplomatic, economic, and social problems of the new nation.

23.211 The United States since 1877 4 Q.H.

A continuation of the survey of American history, with discussion of the emergence of an industrial economy, an urban society, world responsibility, and expanded federal government.

23.212 Topics in American History (Group C) 4 Q.H.

Special topics in the history of the people of the United States from 1789 to the present.

23.213 American Urban History (Group C) 4 Q.H.

The development of urban society in the United States in the nineteenth and twentieth centuries, with emphasis on the effects of immigration and industrialization upon the politics, thought, and society of American cities.

23.214 History of Sport in America (Group C) 4 Q.H.

A history of the major sports and their impact on American life.

23.216 American Reformers and Reform Movements (Group C) 4 Q.H.

An analysis of American reform, especially in the nineteenth century.

23.218 The Civil War and Reconstruction (Group C) 4 Q.H.

The coming of the Civil War, its nature and progress, and the aftermath of Reconstruction.

23.220 The United States, 1890—1920 (Group C) 4 Q.H.

Populism, progressivism, World War I, and the reaction of the 1920s.

23.221 The United States, 1920—1945 (Group C) 4 Q.H.

The Depression, the New Deal, World War II, and mid-century, emphasizing the clash between liberalism and conservatism and the movement from isolationism to interventionism.

23.222 The United States since 1945 (Group C) 4 Q.H.

America's diverse responses to postwar challenges of urbanization, economic change, civil rights, and Communism.

23.226 Governing Nineteenth-Century America (Group C) 4 Q.H.

Analysis of patterns of governing, with attention to public policy, the electorate, political parties and interest groups, in the context of social and economic change in the nineteenth century.

23.227 Governing Twentieth-Century America (Group C) 4 Q.H.

Analysis of the growth of government, with attention to public policy, the electorate, political parties, pressure groups, and federalism, in relation to social and economic change in the twentieth century.

23.230 The Westward Movement (Group C) 4 Q.H.

America's westward movement and its impact on the political, social, and economic life of the nation.

23.231 American Immigration and Ethnic Groups (Group C) 4 Q.H.

An examination of immigration to the United States and its effect on American society.

23.232 The South since 1877 (Group C) 4 Q.H.

A history of the South since Reconstruction, with emphasis upon the rise of segregation, the concept of the New South, and the development of southern society in the twentieth century.

23.233 America and the Sea (Group C) 4 Q.H.

The history of exploration and discovery of America; the development of fishing; the rise of ocean commerce; the history of the American Navy.

23.234 American Military History (Group C) 4 Q.H.

A survey of the complex relationship between American society and war from the age of muskets to the neutron bomb.

23.237 American Social History (Group C) 4 Q.H.
Selected topics in the social history of the American people since 1800.

23.238 History of American Engineering (Group C) 4 Q.H.

The history of technological innovation in America. Attention to the origin and structure of the American engineering profession and the roots of selected modern technical issues in the areas of energy, pollution control, and communications.

23.244 The History of Boston (Group C) 4 Q.H.
The history of Boston from the colonial time to the present with attention to the topographical growth and the ethnic composition of the city.

23.246 The Industrial Transformation of New England (Group C) 4 Q.H.

The process by which New England evolved from an agricultural to an industrial society and the reaction to industry's move from the area. Field trips to historical industrial sites are planned.

23.247 History of Media in America (Group C) 4 Q.H.

Mass communication in American history, with special attention to the role of newspapers, magazines, books, films, radio, and television.

23.253 American Elites (Group C) 4 Q.H.

The life of elite individuals and groups in American society, especially in the nineteenth and twentieth centuries.

23.255 American Business History (Group C) 4 Q.H.

The rise of business in America; the role of the corporation; horizontal and vertical combinations; business and labor; business and government.

23.260 The American Woman (Group C) 4 Q.H.

An analysis of women's economic and social roles from the colonial period to the present, with special attention to women's work, their roles in family and community, and nineteenth and twentieth century women's rights movements.

23.261 The Family in American History (Group C) 4 Q.H.

Explores the history of the family, including the black and ethnic family, in pre-modern and modern American society. Focuses on the traditional and modern roles of parents and children and will investigate patterns of sexuality, marriage, childrearing, work, play, death, and dying. A comparison will be made of family types, including elites, the middle class, and the indigent. External forces affecting family structure and life, such as geographical mobility, industrialization, and warfare will be evaluated. Students will be asked to prepare studies of their own families.

23.264 Sport in Recent America (Group C) 4 Q.H.

An examination and analysis of current issues in American sport, including such matters as violence, commercialism, litigation, racism, sexism, and the roles of government and the media.

23.265 The Automobile in America (Group C) 4 Q.H.

The impact of the automobile on American society in an historical context. Inquiry into the abandonment of traditional prohibitions of motorized carriages and examination of the use of planning, taxes, and highway policies to foster the use of the automobile. The effect of the car on land use, recreation, and the economy. Contemporary issues such as pollution and energy.

23.271 Third World Women (Group D) 4 Q.H.

An exploration of the role of women in the less-developed third world areas with special emphasis on factors of change, development, and continuity.

23.279 Canadian History (Group D) 4 Q.H.

The history of Canada from the time of European settlement to the present, with emphasis on Canadian relations with the United States and on the background of the Quebec separatist movement.

23.280-23.285 Teaching Practicum in History (each) 1 Q.H.

(Prereq. 51.200 and departmental approval)
Students who have completed 51.200 and wish to continue tutoring peers in Western Civilization may do so by enrolling in these courses sequentially. Each course requires three hours per week of tutoring.

23.286 Field Work in History I 4 Q.H.

(Prereq. 23.101, 23.102, 23.210, 23.211 and 16 Q.H. in other history courses)
Directed work in historical societies, archives, museums, and other historical agencies. Students should consult the Department of History for details.

23.287 Field Work in History II 4 Q.H.
(Prereq. 23.286)

Directed work in historical societies, archives, museums, and other historical agencies. Students should consult the Department of History for details.

23.295, 23.296, 23.297 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

23.299 Directed Study 4 Q.H.

African-American Studies

25.100 Black Americans in Science, Technology, and Medicine 4 Q.H.

The course will study the contributions that African-Americans have made to the development of science and technology in America. It will examine the cultural and social factors which have encouraged blacks to work in the fields of science (biology, chemistry, physics) and technology (engineering and medicine). Certification of blacks within the American scientific community and the availability of science to the past and contemporary African-American community will also be explored. Readings, discussions, individual research topics and interviews with black inventors will be used to develop the basic course material.

25.102 Education Issues and Minority Communities I 4 Q.H.

Some of the important issues in today's urban elementary and secondary education systems will be the focus of this course. The analysis will look at the historical development of these issues, and students will be encouraged to think about and discuss their future significance.

25.103 Educational Issues and Minority Communities II 4 Q.H. (Prereq. 25.102 or consent of instructor)

The effects of educational planning and budgeting in the urban community will be discussed. Study will also involve a comparison of the curricula for similar age groups in the urban community and in suburban school systems. The objectives and purposes of public elementary and secondary school education in the urban environment will be discussed as these purposes affect the urban black student.

25.132 Black Private Enterprise 4 Q.H.

What have been the rewards and failures of the private enterprise system on black America? Have black Americans made gains in private enterprise? Is the private enterprise system the best vehicle for economic growth of black America? This course will examine these and other pertinent questions crucial to understanding the relationship between private enterprise and black America.

25.133 The Welfare System in America 4 Q.H.

The management of the distribution of public funds to needy persons has traditionally been one of the most sharply criticized government operations. How does the welfare system work, and how does it help or hinder those who receive aid? Differences in systems in different geographical areas will receive attention.

25.134 The Impact of Culture on Nutrition

4 Q.H.
Eating patterns and general nutrition are often shaped by social and cultural environment. Con-

versely, dietary patterns reveal much about both the distinctiveness and the powers of assimilation of minority groups. Black culture will be discussed as it affects, and is reflected by, the general health, growth patterns, and nutrition of the urban black family.

25.136 The Economics of Urban Poverty 4 Q.H.

Like most Americans and people from around the world, blacks migrated to central cities in America with the intention of improving their economic conditions, but unlike other migrants to urban centers, they were not assimilated into the social/economic mainstream. There is evidence of flagrant job, housing, and educational discrimination against them, even during periods of affluence. During recession or depression, their problems were compounded. Students taking this course will survey the above events from an economic framework.

25.138 Labor, Unions, and Black America 4 Q.H. (Prereq. 25.136 or consent of instructor)

This course will survey the rationale and origins of unions in America including the International Workers of the World, the Dolly McGuire, and the anarchist movements. The course will also survey the history and status of current unionism in America and black involvement. These will include AFL-CIO, Teamsters, and craft, trade, and professional service unions. Students will interview black members in several of these unions and write a paper based on the information gathered.

25.150 History of Blacks in the Media & the Press 4 Q.H.

An historical and visual examination of the development of the African-American experience in the American mass media and press. Contemporary and historical literature, films, and people will be a part of our study and analysis with respect to history, racism, images, psychology, and social movements. Newspapers, film, television and radio will be prime focal points, and they will be used to help form strategies for the future of black Americans.

25.170 Economic Issues in Minority Communities 4 Q.H.

Minority lifestyles, perspectives, self-images, and social position in the urban community are all affected by economic factors, especially those specific to the minority poor. Students will examine these issues, particularly in terms of the application of basic economic theories to the economic realities of minority communities.

25.171 Poverty and Health Care 4 Q.H.

Why do the poor fail to get good health care? The course will discuss problems of the poor and will examine the entire health care system, including Blue Cross and Blue Shield, Medicare

and Medicaid, National Health Insurance, low-income barriers to health care, and future directions of medical health care.

25.172 Community Medicine and Health

Care Delivery

4 Q.H.

(Prereq. 25.171 or consent of instructor)

Provides both theoretical and practical insight into community medicine and the delivery of health care. Overview of the total health care system and theoretical considerations of the role of community medicine, what it should be and how it meets problems associated with the delivery of health care. Practical issues will be addressed through field trips to community health centers and lectures by community health officials.

25.178 Identity and Nationalism in Africa

4 Q.H.

How have centuries of imperialism, the struggle for national unity, and the continuing problems of racism and rivalry between factions affected the present identities and nationalist movements in Africa? This course will explore problems peculiar to Africa and to any group of nations struggling against colonial ideas. Tribalism and the effects of European colonial partition on African identity will be discussed.

25.179 Black Psychological Identity

4 Q.H.

So much is said of stereotyping in news, on television programs, and in literature. The shaping of the black identity over three centuries in America is a complicated and, perhaps, even elusive problem. This course will look at the impact of slavery, racism, war, and poverty on the evolution of the black identity in America.

25.180 Epidemiology of Black Diseases

4 Q.H.

Students will be introduced to the science of epidemiology, the study of the occurrence of disease in populations. The concepts, principles, and methods of epidemiological analysis will be explored. Emphasis will be placed on specific diseases occurring with greater frequency in urban and black populations, such as cardiovascular conditions, sickle cell disease, and certain occupational and environmental illnesses.

25.191 Research Seminar

4 Q.H.

This course is divided into three parts. First, students will have to identify a substantive area of their concern, i.e., welfare, political leadership, education, etc., and define a related problem in a research context. Second, students will be supervised in designing a research methodology most appropriate for examining the problem area; and third, students will conduct extensive research, testing the hypothesis and drawing conclusions based on data analysis techniques.

25.194 Field Research Seminar

4 Q.H.

(Prereq. Consent of instructor)

Seniors will have the opportunity to work with a faculty member on an individual basis, while carrying out a particular research project off campus. Students will refine and polish a topic and outline for the Senior Thesis.

25.195 Directed Study for Senior Thesis

(Prereq. Consent of instructor)

4 Q.H.

The Senior Thesis is required of all African-American Studies majors; it offers students the opportunity to prepare a professional research paper under the close supervision of a scholar interested in students' particular research areas.

25.200 Introduction to African-American Studies

4 Q.H.

The course will touch on several of the possible historical, sociological, cultural, and political avenues of study in the broad interdisciplinary spectrum of African-American Studies. It is intended to help provide an introductory overview of the field and will offer students the opportunity to identify areas for more specific focus.

25.201 African-American Literature I

4 Q.H.

A survey of African-American literature from the period of slavery to the present, with an emphasis on literature concerning the relationship between the rise of the black American and the development of African-American literature. The black experience as it is revealed in literature will be important in the discussion.

25.202 African-American Literature II

4 Q.H.

(Prereq. 25.201 or consent of instructor)

This course will continue the survey of African-American Literature; however, its primary focus will be principal writers and their major themes.

25.203 The Black Novel

4 Q.H.

The black novelist belongs to a unique literary group in the history of American fiction. Special attention will be given to Chesnutt, Toomer, Wright, Ellison, and contemporary novelists, and to their different perceptions of the black experience in America.

25.204 Black Poetry

4 Q.H.

Black poetry has provided an important description of the black experience in American thought through three centuries. This course will survey the black American poet from colonial times to the present. Special attention will be given to major poets and the influences that shaped their works.

25.205 Literary Imagery in Black Writing

(Prereq. 25.202 or consent of instructor)

4 Q.H.

How has the black writer perceived the experience of his people and of himself? And how has the black writer conceptualized its larger environment? Images of poverty and racism as seen by the black writer will be used to show not

only how the novel can be used for social-historical purposes, but as a commentary on past and present racial problems.

25.208 African Civilization I 4 Q.H.

This course will deal with the ancient empires of Africa, especially Ghana, Songhai, Mali, Zimbabwe, the city states of East Africa, and also the Congo Kingdom. Included will be Ethiopian as well as Egyptian history and the controversies surrounding their history to 1800.

25.209 African Civilization II 4 Q.H. (Prereq. 25.208 or consent of instructor)

This course on African civilization will cover the period from 1800 to the present era. Emphasis will be placed on the relationship between Europe and Africa, the circumstances surrounding the imperialist partition of Africa, and the decolonization process.

25.210 Contemporary Issues in Black Society 4 Q.H.

An introduction to the various issues and problems that confront black Americans, including some of the realities of the social, political, and economic problems of contemporary black experience. Students will be asked to assess the validity of specific social theories in relation to the black experience.

25.211 Survey of Black Theatre and Drama 4 Q.H.

Theatre in America has been an important reflector of the national experience, and black theatre, especially in recent years, has served the same purpose for the black community. The course will focus on the development of black drama during the nineteenth and twentieth centuries, with emphasis on modern developments and their political and cultural significance.

25.212 The Black Family 4 Q.H.

How does the black family function, interpersonally and as a social unit? Anthropological and sociological theories will deal with variations in family structure and the function of the black family in black society. The effects of slavery and colonization on the black family structure and functions will also be explored. A side issue will be a discussion of some of the differences and similarities between African, African-American, and African-Caribbean families.

25.213 History of South Africa 4 Q.H. (Prereq. 25.209 or consent of instructor)

Initial attention will be directed toward pre-colonial South Africa and the conflict between Africans and the Dutch and English settlers. The course will then focus on the formation and transformation of colonial policy after World War II, with particular emphasis on racism, neo-colonialism, liberation movement, and international involvement in the apartheid system.

25.214 History of East Africa 4 Q.H.

The first section of the course will deal with the pre-colonial period and the problems of the partition of Africa. The second section will focus on the classical colonial period and the transformations of colonial policy after World War II, with particular emphasis on the ambiguity of decolonization and those features of the colonial system which seem to have become a part of the East African social and political environment.

25.215 History of West Africa 4 Q.H.

The history of West Africa has included the struggle for internal unity, economic development, and social justice. The Pan-Africanist ideology, W.E.B. DuBois's writings, African socialism, and the consolidation of power and leadership will be some of the topical objectives in this study of African liberation, particularly, the rise of West Africa.

25.216 The Black Experience in the Caribbean 4 Q.H.

A descriptive and interpretive analysis of the growth of the modern black community in the Caribbean. While the focus will be on the contemporary period, the course will examine that period in the context of colonialism and slavery in the Americas. Important racial, social, political, economic and religious issues will be addressed.

25.218 Black Man/Black Woman 4 Q.H.

Sociological and anthropological methods will be used to examine black male and female personality development, as well as the development of black male and female behavior, self-image, sexual roles, and behavior within both the black and the white communities.

25.219 The Black Elderly in America 4 Q.H.

This course will compare the demographic characteristics of black elderly Americans with those of the white elderly. This will include age, sex, educational and income levels, occupations, sources of income, etc. The course will also study and compare specific social characteristics of black and white elderly. In relation to the black elderly, these will include the use of their time in relationships with primary and extended family groups and their own view of the history of their lives as black people in America. Such exploration will also help to give students a perspective on the future of blacks in the social and economic life of America. Students will be expected to devise a questionnaire, interview senior citizens, and write a paper based on the information they collect.

25.220 Poverty, Ethnicity, and Crime 4 Q.H.

How closely related are poverty, race, and crime? Is the media misleading? What are the facts and frequency ratios between poverty and

crime, and ethnicity and crime? Recent sociological and criminal research will provide the basis for discussion.

25.222 Third World Political Relations 4 Q.H.
Comparative regional analysis of the political systems of third world nations of Africa, Asia, Latin America, and the Caribbean. Emphasis on development strategies; problems of development, including such topics as national identity, political socialization and participation, national defense, and urbanization; and the positions of third world nations in the international community.

25.223 Urban Political Issues 4 Q.H.
Analysis of the socio-political problems attributed to being poor and living in a major urban setting. Emphasis on relationships between the political structure and urban dwellers. Specific focus on problems of crime, unemployment, education, housing, health, police behavior, political representation, and the political impact of wealthy white enclaves on the urban poor.

25.224 Black Cultural Development in the United States 4 Q.H.
The course will focus on the rise of a distinctive black culture in the United States, with emphasis on examining the premise that the black population in America has developed a cultural system which operates as a subsystem of the American cultural norm.

25.226 Oral Tradition 4 Q.H.
The oral tradition (verbal narrative, folklore, and shared verbal communication) has been of vital importance to the culture and survival of African-Americans. The course will examine the origins and functions of the black oral tradition, with emphasis on its impact on modern America and the arts. Students will have the opportunity to interview elder black Americans to further their understanding of the significance of oral traditions in the black experience.

25.234 Africa Today 4 Q.H.
With increasing numbers of nations striving for economic and political control in Africa, and with imperialist and colonial ideas remaining in the living memory of Africans, Africa presents a complex political and social picture to the rest of the world. This course will examine some of the salient features of black art, politics, and identity in Africa.

25.236 Religion in Black American Society 4 Q.H.
Black life in America cannot be fully understood without a sense of the importance of religion in the community. This course will look at the impact of religion on social structures, group behaviors, moral codes, and belief patterns in black society. Topics will include the church as a social organizer, the role of the black minister in the community, and the variety of black denominations in urban and rural areas.

25.237 African-American History I 4 Q.H.
This survey will cover the development of black America from the period of slavery through the Reconstruction. Emphasis will be placed on the historical links between Africa and America and their impact on black development in the United States.

25.238 African-American History II 4 Q.H.
(Prereq. 25.237 or consent of instructor)
The course will examine the manner in which events in United States and world history have influenced the development of black America, with emphasis on post-Reconstruction development. Specific focus will be contemporary issues studied from an historical perspective.

25.239 Seminar: The Reconstruction Period 4 Q.H.
(Prereq. 25.237 and 25.238 or consent of instructor)
How was Reconstruction handled? Who benefited from it and how did blacks figure in the plans drawn up in Washington and implemented in the South? Black attitudes toward Reconstruction, as well as the standard historical attitudes toward the lengthy process, will be discussed.

25.241 Seminar: The Civil Rights Movement 4 Q.H.
(Prereq. 25.238 or consent of instructor)
The dynamism of the Civil Rights Movement was due both to several great leaders and the support of a people for their leaders. Discussion will cover roots of the movement, including its social, economic, and political significance, as well as its effects on shaping the black image in modern America.

25.244 Fiscal Planning and its Impact on Minorities 4 Q.H.
(Prereq. 25.170 or consent of instructor)
Fiscal planning at the city, state, and national levels is geared to satisfy the needs of certain groups. Minorities have lacked the powerful and influential lobbies more affluent groups have always had, and the economic and social positions of minorities have suffered as a result. Class discussion will focus on some of the financial and psychological problems which current fiscal policies cause the poor urban minorities.

25.246 Survey of Contemporary Black Political Movements 4 Q.H.
The modern black political movements were inspired by a full-scale evolution of black political thought in America. Analysis of this evolution will examine socio-political contests which have served as catalysts to these modern movements.

25.247 Racial Integration and Its Impact on Education 4 Q.H.
An examination of the historical struggle for desegregation. This course will analyze current urban issues in racial integration, and some of the projected effects of integration.

25.255 Public Policy Analysis 4 Q.H.

Analysis of the dynamics of the public policy formation process at the local, national, and international levels with particular attention to the implications of public policy for minority groups. Emphasis will also be placed on a critique of the policy maker, his/her role and power in the socio-economic setting.

25.260 Black Social and Ethical Thought 4 Q.H.

What shapes black social and ethical behavior? The patterns and problems discernible in this behavior as well as the difficulties blacks face in their dealings with the larger white community, will be studied in terms of black self-image, moral perspectives, moral codes, and related issues of the behavioral sciences.

25.265 Caribbean History 4 Q.H.

A descriptive analysis of the development of the Caribbean from the era of slavery to the present. The focus will be on the period 1918-1962, with emphasis on the historical analysis of the relationship of the Caribbean with the United States and black Americans.

25.267 Black Political Behavior 4 Q.H.

An introductory examination of the social and psychological dynamics of black political participation. Main issues of the course will include identity and political socialization, and their impact on black voter turnout and partisan choices.

25.268 Poverty and Politics 4 Q.H.

What is the role of politics in American poverty and how does the government deal with poverty? Major focus will be on the social welfare programs generated by the political system to alleviate poverty and related problems. Additional topics will include the attitudes of the poor toward the political system, its responsibility for their well-being, and their position in the socio-political environment.

25.269 Race Relations in America 4 Q.H.

An examination of the interrelations of ethnic, cultural, and minority groups in the United States. Focus will be on the nature of racial conflicts, discrimination, reverse discrimination, personal and institutional racism, and racial and ethnic stereotyping. Discussion will consider avenues of improvement in attitude awareness and change.

25.270 Black Political Thought 4 Q.H.

How do the black people as a unit view the American political system and the black people's chances of improving their lot in this country? This course will examine black opinions, from the radical to the ultra-conservative, on the United States political system. The focus will be historical in context and will address notions of political socialization and the development of black political ideologies.

25.271 Survey of African-American Art 4 Q.H.

Black art, like black literature, has always been an important aesthetic social statement by the African-American artist. This course offers an historical and critical examination of African-American art from the nineteenth century to the present, with special emphasis on the effects of European and African art styles on the black artist in America.

25.272 Analysis of Comparative Slavery 4 Q.H.

Slavery has had major psychological effects on the shaping of the black American experience, as well as the experience of blacks throughout the world. An analysis of the sociological implications of slavery on group inter-relations, social norms, and cultural aberrations will cover several national versions of the slave system in Africa, Europe, the Caribbean, and North and South America.

25.273 Analysis of the Slavery System in America 4 Q.H.

This course will attempt a comprehensive survey of the realities of the slavery system in America. The focus will be on the impact of slavery on blacks, as well as on the society which perpetrated the system. Examination of slave narratives and other historical documents will provide insights into the origin of the slavery system and the way it functioned until the Emancipation Proclamation.

25.274 Seminar: Black Political Leadership 4 Q.H.
(Prereq. 25.246 or consent of instructor)

This course will focus on several contemporary black political leaders, examining the factors and social contexts which contributed to or thwarted their leadership. Students will be expected to conduct extensive research on a particular black political leader and present a critical analysis of the impact of that leader on the black community.

25.278 Black History of Boston 4 Q.H.

The social, economic, political, and educational history of Boston's black community in the nineteenth and twentieth centuries. The development of the black community and its institutions will be a major focus, and students will be encouraged to know the past in an attempt to understand the present and interpret the future. Research data will include participant observation, oral history, interviews, and primary and secondary source materials.

25.279 Minorities, Ethnicity, and Human Rights 4 Q.H.

The interrelationship between minorities, ethnicity, and human rights is a complicated social and political question which concerns the policy maker at the local, state, and federal level. This course will assess the effect of human rights issues on public policy and the difference these considerations make.

25.281 Survey of African-American Music 4 Q.H.
Black music has evolved in fascinating ways over the past hundred years. Topics will include the impact of African rhythm on black music, the New Orleans coalescence, regional development, ragtime, the emergence of large bands, the harmonic revolution of the 40's, bebop, the 1960's avant-garde, and subsequent development. There will also be some analysis of specific jazz phenomena.

25.283 Seminar: Creative Expression in Blues and Jazz 4 Q.H.

Blues and jazz have been among the most far-reaching and original artistic expressions of blacks in America. The course will touch on possible African sources of inspiration for the musical literature of blues and jazz; however, a more important focus will be on blues and jazz as a reflection of African-American life and the impact these musical forms have had on black self-image and position in American culture.

25.290-294 Directed Study 4 Q.H.

Directed study offers the ambitious student the opportunity to pursue a special intellectual interest not covered by the Departmental course offerings, and to work on this interest with the Departmental faculty member of his/her choice. The faculty member will closely supervise the project, and act as adviser for the duration of the quarter.

25.295-298 Junior-Senior Honors 4 Q.H.

For prerequisites and other details, see section on the Junior-Senior Honors Program on page 5.

Philosophy

26.101 Introduction to Philosophy I 4 Q.H.

An examination of some of the central and persistent issues in philosophy, including theories of reality, theories of knowledge, the problem of evil, the problem of suffering, and problems in religion. Please note that not all sequences treat the same philosophical problems. *26.101 is completely independent of 26.102, and neither is a requirement for the other.*

26.102 Introduction to Philosophy II 4 Q.H.

An examination of some of the central and persistent issues in philosophy, including social and political philosophy, philosophy of art, philosophy of history, philosophy of human nature, as well as the issue of self-deception and various issues in freedom and responsibility. Please note that not all sequences treat the same philosophical problems. *26.102 is completely independent of 26.101, and neither is a requirement for the other.*

The following courses may be of interest to the student wishing to concentrate in African-American Studies. Descriptions for these courses may be found in the appropriate departmental listing.

- 21.145 Urban Society
- 21.150 Race and Cultural Relations
- 21.270 Social Change
- 20.250 Political Anthropology
- 20.255 Economic Anthropology
- 20.259 Urban Anthropology
- 22.132 Political Behavior
- 22.133 Political Parties and Pressure Groups
- 22.137 Civil Liberties
- 22.171 Law and Society
- 22.228 Government and Politics in Africa
- 22.229 Government and Politics in North Africa
- 22.233 International Law
- 22.242 The Politics of Revolution and Change
- 22.245 The Politics and Policies of Developing Nations
- 22.270 Political Theory
- 22.278 Contemporary Political Thought
- 26.101 Introduction to Philosophy I
- 26.102 Introduction to Philosophy II
- 26.155 Moral Philosophy
- 36.120 Existentialism
- 26.131 Social Philosophy
- 30.253 Seminar: Wright/Ellison/Baldwin
- 30.276 African Literature

26.103 Introduction to Religion 4 Q.H.

(Formerly 26.183)
Seeks to identify and appraise different ways of being religious: primitive, mystical, dogmatic, and ritual. Emphasis will be placed upon appreciating the unique standpoint that each requires, how each sees the world in a radically different way, and how that leads to distinctive ways of life.

26.104 Understanding Religious Man 4 Q.H.

(Formerly 26.177)
Several important explanations of the nature, origin, and present significance of religious experience, beliefs, and practices in the light of modern knowledge and attitudes.

26.110 Classical Greek Philosophy 4 Q.H.

An exploration of classical Greek philosophy. Starts with a study/discussion of the roots of western thought in the sixth century, B.C. and argues the reasons for our debt to these original thinkers who were concerned with explaining

the principles of external nature and the problems of human knowledge and conduct. Central to our understanding of these problems will be our study of Socrates, and his adversaries, the Sophists, and his student, Aristotle. The course also covers Roman philosophy, the Stoics, and the Sceptics who are a prelude to the early Christian philosophers of the first century, A.D. Throughout the course, attention is placed upon the interplay between the philosopher and the moral, social, and religious context in which his thought arises. Student participation in class discussion is very important to the course.

26.111 Modern Philosophy 4 Q.H.

European philosophy from the Renaissance to the nineteenth century; emphasis upon Francis Bacon, Descartes, Spinoza, Locke, Berkeley, Hume, and Kant.

26.115 Chinese Philosophy 4 Q.H.

A study of Chinese philosophy in the ancient period (until 221 B.C.). Emphasis will be placed on Confucianism, Taoism, and the *I Ching*. Less emphasis will be placed on the Logicians, the Mohists, and the Legalists.

26.119 American Philosophy 4 Q.H.

(Prereq. 4 Q.H. philosophy or consent of instructor)

Background to American philosophy: Locke, Newton, Edwards, and Colden. The American Enlightenment: Jefferson, Paine, and Rush. Pragmatism: Peirce, James, Dewey, and Meade. Realism: Perry and Sellers.

26.120 Existentialism 4 Q.H.

(Prereq. 4 Q.H. Philos., or consent)

Existentialist philosophy is examined in its greatest representatives, such as Kierkegaard, Nietzsche, Dostoevski, Heidegger, Jaspers, and Camus, with major attention given to Jean-Paul Sartre and Maurice Merleau-Ponty. The focus of this course will be on central themes, including self-alienation, unauthenticity, authenticity and existential experiences. Existential philosophy is examined in its historical, social and cultural relations, and in its influence on psychology, psychoanalysis, sociology, political science, and literature, both in Europe and in the United States.

26.121 Analytic Philosophy 4 Q.H.

(Prereq. 8 Q.H. philosophy or consent of instructor)

The development of the analytic movement from its beginnings in the early works of Moore and Russell. Some treatment of Russell's logical atomism, the logical positivists, the thought of Ludwig Wittgenstein, and their widespread influence.

26.122 Freud, Skinner, and Their Critics 4 Q.H.

(Prereq. 4 Q.H. Philosophy or Consent)

An examination of fundamental themes and concepts of Freud's psychoanalysis and Skinner's

psychology from a philosophical perspective, and criticisms of them from the point of view of reformed Freudians and existentialists. Selections include Freud, Jung, Adler, Karen Horney, Skinner, Koestler, Pearls, Sartre, Merleau-Ponty and Kovaly.

26.124 Philosophy of Psychology 4 Q.H.

(Prereq. 4 Q.H. philosophy or 4 Q.H. psychology or consent of instructor)

An examination of the philosophical and scientific foundations of behavioristic psychology, with emphasis on the acquisition and use of language. Discussion of alternative conceptions, e.g., Chomsky's and those arising from computer studies.

26.125 Philosophy of Mind 4 Q.H.)

(Prereq. 4 Q.H. philosophy or psychology or consent of instructor)

The traditional problems concerning mind/body dualism, and more contemporary problems in the philosophy of psychology. Special emphasis will be placed upon the notions of mental and physical phenomena, their interrelations, and the philosophical problems associated with behaviorism and the concept of the unconscious in psychology.

26.126 Philosophical Problems of Law and Justice 4 Q.H.

A consideration of philosophical issues concerning the law and its enforcement. The focus will be on such areas as the nature of law, the enforcement of morality, the limits on legal interference with individuals, the justification of punishment, and alternatives to punishment.

26.127 Philosophy of Language 4 Q.H.

(Prereq. Consent of instructor)

Prospects for a theory of language, its syntax and semantics. Contrasts between theory of reference and theory of meaning. Are there universals of language? Relations between linguistics and psychology. Readings from Frege, Quine, Russell, Chomsky, and Fodor.

26.130 Aesthetics 4 Q.H.

An historical approach to aesthetics. Aesthetics is the philosophical analysis of concepts and the solution of problems that arise when one contemplates beautiful (or ugly) objects; it is also concerned with standards of value in judging art. Aesthetics asks the following questions: What features make objects beautiful (or ugly)? Are there aesthetic standards? What is the relation of works of art to nature? What is the nature of an aesthetic experience?

26.131 Social and Political Philosophy 4 Q.H.

(Prereq. 4 Q.H. philosophy or consent)

A philosophic examination of twentieth century theories on man and society, social change and institutions. The major attention is given to the Hegel-Marx relationship and its critical evaluation, to Existentialist social thought and to con-

temporary American political ideas. Selections will include Hegel, Marx, Sartre, Camus, Marcuse, Niebuhr, and Sidney Hook. For students majoring in philosophy, sociology, political science, history, and other social sciences.

26.133 Philosophy of Science

(Prereq. 8 Q.H. natural or social science)

Analysis of distinguishing characteristics of the scientific enterprise; the role of theory, observation, and experiment; significance of paradigms to claims of objectivity; effects of differing methodology on content; and problems about the relation among various sciences.

26.134 Philosophy of Religion

4 Q.H.

(Prereq. 4 Q.H. Religion or consent)

The basic question in this course is "Does God exist?" The course examines several major arguments affirming and criticizing the notion of God's existence. A central problem in recent philosophy of religion is whether or not it makes any sense to speak of the truth (or falsity) of religious belief, as well as the implications an answer to that issue has for religious life; this topic will be examined in the later half of the course. In addition, each student is required to write an essay on the basic question from any point of view relevant to the issues discussed in the course.

26.135 Philosophy of Human Nature

4 Q.H.

A philosophical inquiry into the theories of man, man's dimensions, and human nature. The question of the existence of human nature will be thoroughly examined. Special interest will be given to contemporary theories of man and self-alienation, and their influence in social sciences. Selected readings from Descartes, Hobbes, Hegel, Marx, Kierkegaard, Maritain, Freud, Skinner, Fromm, and Frankel.

26.136 Existentialism and Literature

4 Q.H.

After World War I and II, existentialist philosophy inspired the literature of "extreme situations." This course examines human extreme experiences in existentialist philosophy and novels. Some of the major themes are loneliness, self-alienation, social pressures, conformity, absurdity, anxiety, social, political and moral crises, nothingness, and death. Selected readings will include the most influential European and American authors.

26.137 Philosophy and Literature

4 Q.H.

A study of the basic philosophical themes contained in the novels of such writers as Tolstoy, Dostoevski, Thomas Mann, Sartre, Camus, Kafka, Proust, Hesse, and Saul Bellow. Among the traditional philosophical problems the following will be discussed: happiness, time, good, love, hate, sex, jealousy, and freedom. From the existentialist viewpoint, the following issues are described: self-alienation, human existence and meaning of human life, absurdity, anxiety, suffering, and death.

26.143 Vonnegut as Philosopher

4 Q.H.

Philosophical themes in the work and thought of Kurt Vonnegut, Jr. His novel view of human society and its relationship to art, technology, and history will provide a general background. Within this, his treatment of the meaning of life, the nature of a person, the mysteries of language, and the possibility of time-travel will be discussed. Vonnegut's novels and other materials will be used.

26.144 Technology and Human Values

4 Q.H.

The course examines the changing values of the modern, technologically advanced world. Our study attempts to increase our understanding of the supposed breach between the literary and scientific cultures, the diverse approaches toward their reconciliation, and the human dimensions of science and technology. Other relevant topics are the neutrality of technology with respect to good or evil uses, technology as an instrument for human liberation, and the issue of proper and effective modes of controlling technology in today's world. Pirsig's widely read paperback, *Zen and the Art of Motorcycle Maintenance*, is studied, as is Lynn White's *Dynamo and Virgin Reconsidered*. Other important writers to be considered include Kurt Baier, J. Bronowski, Barry Commoner, Erich Fromm, Karl Marx, and C. P. Snow.

26.145 Technology and the Individual

4 Q.H.

This introductory course attempts to awaken philosophical reflectiveness regarding the effects of technological change on the individual. We will discuss such issues as the relation of technology to human freedom and privacy; the effects of "future shock" upon the individual; the possibility of the tyranny of a technological elite; and the prospects for the transformation of humankind. What are the social, psychological, and philosophical consequences of technological change in our day and in the future? Major reading for the course includes selections from Alvin Toffler's *Future Shock*, Herbert Marcuse's *One Dimensional Man*, Jacques Ellul's *The Technological Society*, and Lewis Mumford's *The Transformation of Man*.

26.148 The Meaning of Life

4 Q.H.

An examination of selected philosophical problems of human existence in the contemporary world, with major emphasis on man's search for his identity and self-fulfillment. Selected problems will be discussed, such as freedom, death, sexuality, alienation, self-fulfillment, unauthenticity, authenticity, becoming a person, and peak experiences. The course will include readings from Kierkegaard, Heidegger, Sartre, Camus, Maslow, Allport, Frankel, Rogers, and Rollo May.

26.150 Introduction to Logic

4 Q.H.

A study of Aristotelian logic, covering basic concepts of logic, the evaluation of arguments, and the informal fallacies. Some of the basic con-

cepts covered are argument, difference between deduction and induction, validity and truth. The informal fallacies deal with the common errors in argumentation.

An elementary study of deductive reasoning, with emphasis on propositional and Aristotelian logic. Practice in constructing, analyzing, and evaluating everyday arguments.

26.151 Symbolic Logic 4 Q.H.

A presentation of the syntax and semantics of propositional logic and first-order quantification theory. Relations between these systems and natural language are considered. The course covers analysis of the notion of derivation within a system, and the notion of logical consequences, and practice in analyzing logical structure in natural language sentences.

26.152 Theory of Knowledge 4 Q.H.

(Prereq. 4 Q.H. philosophy or consent of instructor)

This is an introduction to epistemology or theory of knowledge, which asks the following questions: What is knowledge? Is knowledge (or even certainty) attainable? What are the limitations of human knowledge? How is knowledge—if we have it—acquired? What roles do reason and experience play in the attempt to attain knowledge?

This course will use both classical (Rene Descartes and David Hume) and contemporary sources (Bertrand Russell and others). Various theories of knowledge, such as empiricism, rationalism and scepticism, will be examined and criticised. The student will be encouraged to form at least tentative opinions on these issues.

26.153 Metaphysics 4 Q.H.

A consideration of central problems and theories concerning the nature of reality, with special attention to such areas as the relation between mind and matter, free will and determinism, and criteria of existence.

26.155 Moral Philosophy 4 Q.H.

(Prereq. 4 Q.H. Philosophy or Religion or consent of instructor)

What sorts of things are good and bad? What actions are right and wrong? These two basic questions are explored. The course covers major classical conceptions of ancient Greece and Rome, their replacement by the Western religious ethic, its modification and rejection in the early modern period, and the emergence of modern versions of traditional conceptions of the good life, with reflections on the nature of ethical inquiry itself as a legitimate study.

26.159 Ethics: East and West 4 Q.H.

Is there a *best* way to live? Is there a way a human being *should* live? In Eastern and Western philosophy there are claims that a way of life exists which leads to happiness, power, and wisdom. We will explore this claim by study-

ing the thought of such philosophers as Socrates, Buddha, Plato, Aristotle, Lao Tzu, Epictetus, Marcus Aurelius, Aquinas, and Spinoza, as well as by studying some of the classical Hindu and Buddhist texts.

26.168 Moral Problems in Medicine 4 Q.H.

Examines two fundamental ethical systems, one of which is grounded on the dignity of the person, the other on the intrinsic value of happiness. The course then explores the difficult issues of euthanasia, suicide, paternalism, medical experimentation, the patient's right to consent to any therapeutic intervention, and the concept of death with dignity. After studying these and related moral issues, we turn to the larger economic and policy issues of justice, some of which are current in political debates (for example: Is there a right to health care?).

It is hoped that this course will encourage the student to become more sensitive to moral problems as they arise in medical settings, better able to deal with these troublesome issues, and perhaps more courageous in facing them if that becomes necessary.

An investigation into the questions of abortion, euthanasia, infanticide, genetic counseling, psychosurgery, and human experimentation from the standpoint of both philosophical ethics, such as the theory which states that the ends justify the means; and religious ethics, such as the Natural Law theory of the Roman Catholic Church.

26.169 Women in Religion 4 Q.H. (Formerly 26.173)

An enquiry into the role of women in traditional and non-traditional religious systems.

26.170 Western Religions 4 Q.H.

Western religion is grounded in the experience of God's presence, which transcends and transfigures the life of the individual and the community. This encounter is the essence of Judaism, Christianity, and Islam. Drawing on autobiography and biography, this course will delve into the personal religious quests of such major religious thinkers as St. Augustine, St. Theresa, Martin Luther, Elie Wiesel, Richard Rubenstein, Dietrich Bonhoeffer, and Mohammed.

26.171 Oriental (Eastern) Religions 4 Q.H.

Course will examine Theravada Buddhism, Mahayana Buddhism, Taoism, and Hinduism of the *Upanishads*. As part of our exploration of this form of Hinduism, we will intellectually examine and practice a few methods of meditations and investigate the devotional aspect of Hinduism as expressed in the *Bhagavad Gita*. Finally, we will explore Zen.

26.173 Cults and Sects 4 Q.H.

An examination of the varieties of religious experience from the perspectives of sociology and

psychology of religion. The course will focus on such cultic and sectarian groups as Christian Science, the American Shakers, the Unification Church, the Hare Krishna movement, and the Black Muslims. The primary purpose of this course is to provide the student with critical investigative tools with which to analyze different religious expressions.

26.178 Religion in a Social Context 4 Q.H.

An exploration of the social forms of religion. The structures and roles of the church, synagogue, and sect are described and critically evaluated. In addition, emphasis is given to their function, with reference to general social structure, process, and reform.

26.182 Religion in the Age of Science 4 Q.H.

An examination of the problems posed by the interaction between religion and the natural and social sciences. Representative selections from Hume, Darwin, Marx, Freud, Erickson, and Troeltzsch are used to interact with selections from Bultmann, Teilhard de Chardin, Niebuhr, Bonhoeffer, and Tillich.

26.187 The Meaning of Death 4 Q.H.

An inquiry into different philosophical and religious perspectives on death and life after death. This course will include an examination of some powerful contemporary accounts of personal confrontation with death, along with investigations into attitudes toward death in other traditions (e.g., Hinduism and Buddhism). In addition, the course will explore responses to the mass death of the Holocaust in Germany, and theories about life after death such as those discussed in Raymond Moody's *Life After Life* and Ian Stevenson's *Reincarnation*.

26.188 The Occult as Religion 4 Q.H.

The history, aims, and method of such esoteric or mystic doctrines as astrology, numerology, magic, demonism, and divination. Investigates the structural similarities of these religious forms to those of the dominant religious traditions of the world.

26.189 Philosophy of Death, Grief, and Dying

4 Q.H.

An exploration of fears about death and dying, and the grieving process, and an examination of the processes people sometimes experience while dying. In addition, the course will examine current practices of caring for the dying and of coping with bereavement, questioning whether these practices are, in fact, healthy, helpful, and/or ethical. Other relevant ethical issues to be examined include euthanasia, truth-telling with the dying, suicide, and paternalism. The course will close with the question of the meaning of life, given the fact that we must die.

26.190, 191, 192 Honors I, II, and III 4 Q.H.

(Prereq. 26.190, per NU catalog; 26.191-26.190, 26.192-26.191)

Students interested in taking Junior-Senior Honors courses should confer with Department Chairperson. Arrangements are made between the student and a member of the faculty. Each Honors course carries a value of 4 Q.H. credit. *Staffing:* by arrangement.

26.195 Directed Studies 4 Q.H.

(Prereq. By arrangement between student and faculty.)

Those interested in the Directed Studies program, should meet with Department Chairperson. *Staffing:* by arrangement. 4 Q.H. credit.

26.203 Existentialist Phenomenology 4 Q.H.

(Prereq. 4 Q.H. in philosophy or consent)

An inquiry into the inspiration of European phenomenology for the development of social sciences in the United States, especially in psychology and psychoanalysis. Part of the course is devoted to the examination of Husserl's phenomenology and its central concepts, such as intentionality, intersubjectivity, and life-world. These concepts and their modifications are followed in Heidegger, Sartre, and Merleau-Ponty. A brief survey of Freud's theories and behaviorism sets the stage for deeper examination of the differences between these two trends in psychology and the works of American scholars who have been inspired by existentialist philosophy in their attempts to use phenomenological method in social sciences. For students majoring in philosophy, psychology, sociology and other social sciences.

26.251 Intermediate Logic 4 Q.H.

(Prereq. 26.151)

Study of the major results in the meta-theory of first-order logic. Consistency, completeness and decidability. Discussion of the general notion of an effectively computable process, Church's thesis, and the existence of unsolvable problems.

26.265 Seminar in Wittgenstein 4 Q.H.

(Prereq. 8 Q.H. in philosophy or consent of instructor)

This course is designed to provide the student an introduction to Ludwig Wittgenstein and his thought. One of the most influential philosophers of the twentieth century, Wittgenstein possessed both analytic genius and the creativity of a visionary. With unparalleled intensity, he addressed himself to philosophical problems: What is the relationship between language and the world? Are there thoughts "too deep" for words? What, if anything, can be said about the mystical, the beautiful, and the religious? What is consciousness and what is its role in action? What are the big, simple, mistaken ideas that cripple the philosophical enterprise? How should philosophers proceed? What is meaningful?

26.276 Mysticism: East and West 4 Q.H.

(Prereq. 26.177, 26.180, or consent of instructor)
An inquiry into mystical experience through a comparative study of the writings of Christian, Buddhist, and Hindu mystics, and secondary interpretive sources. Areas taken up are the potential oneness of man and God, the conflict of mystics with traditional forms of religion, and the possibility of a common, cross-cultural basis for mysticism.

Art**27.113 Creative Drawing** 4 Q.H.

Creative drawing in pen and ink, pencil, and crayon, with emphasis on form and texture.

27.115 Basic Painting 4 Q.H.

An introductory studio course in the fundamental techniques of painting. Formal problems in the study of color, light, space systems, form, and composition will establish the foundation for more individual creative expression. Critiques and slide lectures as needed.

27.118 History of Art I 4 Q.H.

A survey of Western art from prehistoric times to the Renaissance.

27.119 History of Art II 4 Q.H.

A survey of Western art from the Renaissance to the twentieth century.

27.121 Contemporary Directions in Cinema 4 Q.H.

A comparative study of selected films by major contemporary directors. Film screenings, discussions, assigned readings, and lectures. No lab fee required.

27.129 Photo Silkscreen 4 Q.H.

Creative use of the photo silkscreen process, developing ideas visually through a combination of photography and hand-cut stencils. Emphasis on organizing relationships between the forms in order to communicate the idea effectively. No previous knowledge of photography or silkscreen necessary.

27.131 Ancient Art 4 Q.H.

A concentrated study of art from prehistoric times to Greek civilization, including Egyptian Mesopotamian, and Aegean art.

27.136 Classical Art 4 Q.H.

A concentrated study of Greek and Roman art.

27.137 French Painting 4 Q.H.

French painting of the nineteenth century, focusing on Romanticism, Realism, Impressionism, and their cultural implications.

27.139 Medieval Painting and Sculpture 4 Q.H.

Romanesque and Gothic painting and sculpture from the tenth to the fifteenth centuries.

27.143 Mexican Art 4 Q.H.

A concentrated study of Pre-Columbian art from the Archaic and Classical periods to the present.

27.144 Latin American Art 4 Q.H.

The arts of architecture, sculpture, and painting of various countries of Latin America except Mexico, from Pre-Columbian times to the twentieth century.

27.150 History of Photography 4 Q.H.

Study of development of photography from early 19th century to present.

27.151 Modern Painting 4 Q.H.

Survey of 20th century painting, including major schools such as impressionism, cubism, surrealism, and expressionism.

27.152 Introduction to Art 4 Q.H.

A basic introduction to the characteristics of the visual arts, including painting, sculpture, graphic arts and architecture. Various examples of works of art are studied as an introduction to style and technique.

27.161 American Art I 4 Q.H.

American architecture, sculpture and painting from Colonial times to 1860.

27.162 American Art II 4 Q.H.

American architecture, sculpture, and painting from 1860 to the present.

27.163 The American Film 4 Q.H.*

The unique rise of the American film and its influence on a burgeoning new international art form. Each week, a key film representing a major aesthetic development or stylistic period will be introduced, screened, and discussed. Lectures exploring the American film's historical context and significance will complement the screenings.

27.173 Modern Architecture and the City 4 Q.H.

American and European architecture and city planning from 1850 to 1920, with special emphasis on such cities as Boston, New York, Chicago, London, and Paris.

27.175 Late Nineteenth-Century American Architecture 4 Q.H.

A survey of the Stick and Shingle Architectural Styles, as well as more general developments. Introductory lectures are followed by student presentations on selected topics.

27.176 Contemporary Architecture and the City 4 Q.H.

A study of the great figures and chief movements of American and European architecture and city planning of the twentieth century.

27.177 Introduction to Architecture 4 Q.H.

A survey of the stylistic characteristics of architecture from ancient periods to the present.

27.183 Seminar in Modern Art and Architecture (Prereq. One course in art history since the Renaissance) 4 Q.H.

Selected topics in modern art and architecture.

27.184 Graphic Arts I—Woodcutting 4 Q.H.

Creative printmaking utilizing the medium of woodcutting.

27.185 Graphic Arts II—Silkscreen 4 Q.H.

Creative printmaking utilizing the medium of silkscreen.

27.186 Documentary Film 4 Q.H.*

Study of the aesthetics and tradition of the documentary film, with a major emphasis on contemporary directions.

27.189 Photography 4 Q.H.*

Introduction to theory, practice, and techniques of photography. Emphasis on aesthetic, creative, technical, professional, and commercial aspects of making a photographic image.

27.190 Filmmaking Workshop 4 Q.H.

Introductory course in the creative use of the film medium. Emphasis will be placed on weekly lab assignments designed to develop skills in the fundamental techniques of filmmaking. A final film project expressing an original idea in film form will be required of each student. Film screenings, lectures, and critiques. Equipment will be provided by the department. No lab fee.

27.191 Renaissance Art and Architecture 4 Q.H.

Italian painting, sculpture, and architecture of the fifteenth and sixteenth centuries, with special reference to the historical and social forces that shaped them.

27.193 Arts of the Old West 4 Q.H.

A survey of the arts of the early settlers of the American West, including Indians and frontiersmen, revealed through the building, painting, photography, and films of the old West.

27.194 Life Drawing 4 Q.H.

Basic studio course in the study of the human figure. Exploration of anatomy, technique, and style will be emphasized in weekly drawing sessions utilizing the model. Critiques and slide lectures as needed. No lab fee.

27.195 Animation Workshop 4 Q.H.

Introductory course in the creative possibilities of the animated film. Lab assignments are designed to acquaint students with the various animation techniques and reveal the particular creative advantage of each. Students are required to complete a final, original, animated film. Film screenings, lectures, and critiques. Equipment supplied by the department. No lab fee.

27.196 Boston Architecture—Past and Future 4 Q.H.

An exploration of the architectural elements and environmental forces that have shaped the city, with constant reference to its future architectural plans and development. Lectures, discussions, and field trips.

27.197 Art and Society 4 Q.H.

An examination of the way in which societal forces and political ideologies are expressed in the visual arts, especially in painting and architecture. The course combines a broad overview of a few significant historical periods with a more focused concentration on the past two hundred years.

27.198 History of Film 4 Q.H.*

An introductory historical survey of the development of film as an art form, from the late nineteenth-century hand colored silent films to the contemporary international movement. Lectures, screenings and discussions.

27.201 Architecture and the City 4 Q.H.

A selective examination of Western architecture in the context of the urban environments that produced it. Special attention will be paid to the cultural and social forces which shaped this architecture of the cities.

27.295, 27.296, 27.297 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

27.291, 27.292, 27.293 Directed Study (each) 4 Q.H.

Independent work under the direction of members of the Department on a chosen topic. Limited to qualified junior and senior students majoring in art history, with approval of the Department.

Music

28.100 Music I 4 Q.H.
Introduction to selected works of our musical heritage from earliest to contemporary styles. Primarily a survey and listening course, with emphasis on styles, basic theory, forms, and the historical, social, and artistic periods which these works represent.

28.101 Music II 4 Q.H.
(Prereq. 28.100, 28.102, or 28.106)

An in-depth continuation of 28.100, aimed at the further development of appreciation and understanding of selected works of our musical heritage. The course consists of a detailed study of these works and their relationships to the artistic milieu in which they were created.

28.102 Learning to Read and Write Music 4 Q.H.
A basic course for those who have wanted to know how to read a score, or how to write a tune. Students will learn to read music at sight, and to compose in some of the basic forms (song, theme and variation, etc.).

28.106 Theory I, Tonal Techniques A 4 Q.H.
(Prereq. 28.133)

Ear training, sight singing, and dictation. Elementary harmony including dominant seventh chords and non-harmonic tones. Elementary musical analysis.

28.107 Theory II, Tonal Techniques B 4 Q.H.
(Prereq. 28.106)

Intermediate ear training, sight singing, and dictation. Intermediate harmony and musical analysis.

28.112 Music of the Baroque 4 Q.H.
The period of the emergence of the orchestra, the chorus, and the virtuoso performer; the development of the oratorio, opera, concerto, and symphony in the works of such composers as Monteverdi, Corelli, Handel, Vivaldi, and J.S. Bach.

28.113 Bach 4 Q.H.
The genius who summed up the Baroque era. A study of the man whose every note reflected his profoundly humanistic approach to religion. Works include large choral masterpieces such as the *St. Matthew Passion*, the *Brandenburg Concertos*, and *Well-Tempered Clavier* and the *Suites*.

28.115 Music of the Classical Era 4 Q.H.
That which is classical concentrates on lasting values like form, balance, and perfection of detail. Classical music therefore has values which make it meaningful in any period of history. Classicism reached its peak in the latter part of the eighteenth century with Mozart and Haydn, whose vocal and instrumental works will be studied in detail.

28.117 Medieval and Renaissance 4 Q.H.
The development of sacred and secular monophony, vocal and instrumental works, and of polyphonic music from its beginning to about 1600.

28.119 Since Webern: The Avant-Garde 4 Q.H.
The avant-garde in music; total serialism, musique concrete, electronic music, chance music. The avant-garde in jazz, folk, rock, and pop.

28.120 Survey of Music History 4 Q.H.
A chronological view of Western music and the men who shaped its course. Selected works which demonstrate the trends in each period will be listened to and discussed with a view to style, continuity, and change. Among the composers whose works will be studied are Machaut, Josquin, Byrd, Bach, Mozart, Beethoven, Berlioz, Wagner, Mahler, and Stravinsky.

28.123 Music of the Romantic Era 4 Q.H.
Romantic realism and idealism in the nineteenth century. Emphasis is placed on historical, nationalistic, and literary influences in music. Composers studied include: Beethoven, Schumann, Schubert, Berlioz, Liszt, Chopin, Verdi, Wagner, Brahms, Tchaikovsky, and Mahler.

28.124 Traditional Folk Music of the Western World 4 Q.H.
The folk music of Europe, Africa, North and South America, Asia, and Australia. The ethnic music, dances, traditions, epics, and sagas that have influenced Western and Eastern cultures.

28.125 Great Choral Literature 4 Q.H.
Analysis of sacred and secular choral literature from medieval to contemporary times.

28.126 Music as a Means of Social Expression 4 Q.H.

Deals with the artist's involvement with recurring social themes of man's view of himself, his search for brotherhood, his relation to minority groups, and his sexual relationships. Paintings and literary works are used in addition to works by Beethoven, Schoenberg, Britten, and jazz composers.

28.128 Post Romanticism in Music 4 Q.H.
The consummation of nineteenth-century Romanticism and the forerunners of twentieth-century Expressionism, as seen in the works of Mahler, Bruckner, Strauss, and others.

28.133 Fundamentals of Music Theory 4 Q.H.
To help prepare the student for a study of music theory, this course will deal with the basics of musical notation and ear training. The student will have the opportunity to learn to take simple melodic and rhythmic dictation, to recognize and build scales, intervals, and triads, and to sing at sight a simple diatonic melody.

28.134 Theory III, Tonal Techniques C 4 Q.H.
(Prereq. 28.107)

Principles of harmonization including modulation and altered chords. Realization of figured bass. Introduction to counterpoint. Some original writing. Advanced ear training.

28.135 Music of the U.S.A. 4 Q.H.

American music from the time of Puritan psalm singing to the present. Folk music of ethnic origin, concert music, ragtime, jazz, and contemporary styles are discussed.

28.136 Music in Popular Culture 4 Q.H.

Emphasis on the twentieth century, especially the last twenty years. Thought is given to various subcultures, as seen in folk, jazz, rock, and soul. Reference is made to popular music of other countries.

28.137 Masterworks of Musical Literature 4 Q.H.
(Prereq. 28.105 and concurrent membership in a musical ensemble)

Analysis of a small number of musical masterpieces covering a diverse range of styles within the "Western" tradition. Aspects of phrasing, harmony, harmonic rhythm, orchestration, and rhythm will be analyzed. Effort will be made to coordinate subject matter with concurrent performances in the Boston area.

28.138 Nationalism in Music 4 Q.H.

Music in the service of the emerging states. Among the composers studied are the Russian Five, Smetana and Dvorak of Bohemia, Sibelius of Finland, Grieg of Norway, Gade of Sweden, Liszt and Bartok of Hungary, Gottschalk, and MacDowell and Ives of the United States.

28.140 Mozart 4 Q.H.

Mozart's musical development from child prodigy to mature artist is traced from personal letters and biographies. Many of his major works, including opera, symphonies, concertos, and chamber music, are analyzed in detail.

28.141 Twentieth-Century Music: Debussy to Schoenberg 4 Q.H.

The developments in music from 1900 to mid-century. Impressionism, expressionism, neo-classicism, post romanticism, and neo-nationalism.

28.142 Stravinsky 4 Q.H.

Stravinsky: the man who ushered in the twentieth century in music and lived to become a classic. His life and works: *Le Sacre du Printemps*, *Petrouchka*, *Symphony of Psalms* and more recent works are given detailed attention. His contributions to twentieth-century style—neo-classicism, pandiatonicism, additive style—are analyzed and his strong influence on other composers is noted.

28.145 Beethoven 4 Q.H.

An analysis of the complex personality and art of this major figure. His relation to the turbulent

times in which he lived; his role in classical and romantic music.

28.160 The Symphony 4 Q.H.

A study of the symphony as the major genre in the classical, romantic, and contemporary periods. Works by Haydn, Mozart, Beethoven, Schumann, Tchaikovsky, Brahms, Sibelius, Prokofiev, and others are studied.

28.180 Introduction to Opera 4 Q.H.

Analysis of opera as a dramatic form. Aria, recitative, ensemble, and other basic elements of opera are isolated and discussed. Numbers opera, music drama, and singspiel are some of the types of opera considered. Composers whose works are analyzed include Mozart, Wagner, Verdi, and Puccini.

28.181 Contemporary Opera 4 Q.H.

Almost every composer, including Schoenberg, Berg, Bartok, Stravinsky, Hindemith, and Poulenc, has contributed to the opera repertory, thus illustrating twentieth-century style. Among the works studied are: *Wozzeck*, *The Rake's Progress*, *Dialogue of the Carmelites*, and *Bluebeard's Castle*.

28.182 Wagner's Ring Cycle 4 Q.H.

An in-depth study of Wagner's Cycle of music drama; *Das Rheingold*, *Walkure*, *Siegfried*, *Götterdämmerung*. Wagner's compositional techniques (e.g., the use of leitmotif and musical metaphor) are examined in detail.

28.200 Jazz 4 Q.H.

Jazz from its origins in New Orleans to the avant-garde experiments of today. The rhythmic, harmonic, instrumental, and stylistic characteristics of jazz are analyzed. Attention is given to the works of creative jazz artists such as Armstrong, Beiderbecke, Parker, Ellington, and Coltrane.

28.201 The New Jazz 4 Q.H.

An in-depth study of various recorded works of important jazz performers/composers with respect to their works as creative artists: Armstrong, Beiderbecke, Ellington, Coltrane, Miles Davis, etc. The study is not chronological but deals with the dynamics of artistic growth and change. Special attention is given to the developments of the last decade: third stream, free jazz, Eastern influences, electronic instruments, etc.

28.202 Black Artist in Music 4 Q.H.

A study of the contributions of black composers and performers to the world of music.

28.215 Recorder Workshop 4 Q.H.

Beginning recorder technique and the development of sight-reading ability. Students have the opportunity to learn music theory through application in class performance. Simple duos, trios, and quartets will be used to help develop ensemble skills.

28.230 Musical Performance I 1 Q.H.
(Prereq. Audition or permission of instructor)
Participation in rehearsals and public performances and/or research, composition, arranging, conducting, solo and ensemble activity, etc., with the Chamber Orchestra, the Early Music Players, the N.U. Chorus, the N.U. Bands, or other ensembles, under the supervision and coaching of a faculty member of the Music Department. The student's progress will be evaluated at the end of the quarter by audition or otherwise.

28.231 Musical Performance II 1 Q.H.

28.232 Musical Performance III 1 Q.H.

28.233 Musical Performance IV 1 Q.H.
(Continuations of 28.230)

28.240 Piano Class I 4 Q.H.
Designed to teach functional piano in a modern electronic piano laboratory on a P.S.I. (Personalized System of Instruction) basis. Keyboard harmony and aspects of tonal memory. A major objective of this course is the development of a progressive keyboard repertoire.

28.241 Piano Class II: Personalized System of Instruction II 4 Q.H.

28.250 Music as a Listening Experience 4 Q.H.
This introduction-to-music course is listening-oriented and has been designed to provide tools for the aural appreciation of music. No previous musical knowledge is required or assumed, and studies deal directly with compositions selected from the masterpieces of music. Organized according to the tenets of P.S.I. (Personalized System of Instruction), the course allows the student to proceed at his or her own pace under the constant guidance and supervision of the instructor. Grades are determined by the number of units completed, and peer-tutor assistance is provided.

28.261 Music Therapy 4 Q.H.
Examines the application of music as a therapeutic vehicle. The use of music to release suppressed emotions and to encourage self-expression in psychiatric patients; to treat people with speech disorders, facial palsy, and other disorders. Music therapy is currently being considered as a supplemental vehicle to shock and other treatments. Music therapy is a modern approach to supplemental health services.

28.270 Strings I 4 Q.H.
An examination of fundamentals of instrumentation and orchestration, traditional string instrument class approaches including Bornoff and Herfurth, and orchestra development. Concentration upon the violin and viola.

28.271 Strings II 4 Q.H.
(Prereq. 29.270)

Particular attention will be given to playing and

teaching the cello and the contrabass with study of the Suzuki approach. Opportunity will be provided to examine instrumentation, fundamentals of conducting, and the development of string instrument classes and orchestras.

28.272 Woodwind Instruments I 4 Q.H.
Concentration will be on playing and teaching the flute, clarinet, and saxophone. Principles of arranging, orchestrating, and conducting woodwind classes, orchestras, and wind ensembles.

28.273 Woodwind Instruments II 4 Q.H.
Focus on playing and teaching the oboe and bassoon, together with arranging and conducting for single/double-reeds, woodwind ensemble, orchestra, and wind ensemble.

28.277 Voice Class 4 Q.H.
A study of the human voice as a musical instrument. Emphasis will be given to the development of standards and methods by which vocal tone quality and knowledge of tone production are evaluated. Vocal problems of the head voice, changing voice, ensemble groups, etc., will be discussed.

28.278 Organizing and Developing Instrument Programs 4 Q.H.

An examination of Suzuki, Bornoff, Herfurth, Prescott, homogeneous and heterogeneous approaches to instrumental music development. Consideration will be given to the development of individual performers as well as rhythm bands, chamber ensembles, marching and concert bands, and orchestras.

The inclusion of social instruments such as the recorder, guitar, accordian, etc., in a K-12 program will be studied.

28.290 Directed Study 4 Q.H.
Independent work in a selected musical area under the direction of members of the Department. Limited to qualified students with the approval of the department chairman, and only by special arrangements with the supervising faculty member.

93.160 American Musical Theatre (Fall and Winter) 4 Q.H.

An interdisciplinary course, taught by the Departments of Drama and Music. The development of the American musical, from *The Black Crook* to *Hair* and *Jesus Christ Superstar*, as an entertainment and as a serious art form, through an examination of script, score, dance, and design. Works by Bernstein, Rodgers and Hammerstein, the Gershwins, Weill, Lerner and Loewe, and Cole Porter are examined. Guest lecturers, recordings, films, and live productions supplement the course.

Drama and Speech

29.102 Effective Speaking 3 Q.H.

(Prereq. Industrial Engineering students only; Speech Communication for specific purposes)

Designed to help provide the student with a basic understanding of the communication process and its function as a means of relating to the world, ourselves, and other people. The course will examine factors in intra- and interpersonal communication, group communication, and public speaking through lectures, discussions, structured learning experiences, and written assignments.

29.105 Argumentation and Debate 4 Q.H.

(Prereq. 29.108, 29.129, or permission of instructor)

An applied course designed to help develop skills in rational decision making through advocacy. Attention is given to logical reasoning, psychological methods, and motivational techniques.

29.106 Speech Fundamentals 3 Q.H.

(Prereq. Recreation majors only; Speech Communication for specific purposes)

This course is designed to give the student an opportunity to develop a basic understanding of the communication process and its function as a means of relating to the world, ourselves, and other people. It will examine factors in intra- and interpersonal communication, group communication, and public speaking through lectures, discussions, structured learning experiences, and written assignments.

29.108 Business and Professional Speaking 4 Q.H.

Practice on oral presentations, group communication, conference and discussion techniques, interview methods, and occasion speaking. The course combines performance aspects with case study methods of communication on the professional level.

29.109 Speech for the Theatre 4 Q.H.

(Prereq. 29.110)

Special speech problems confronting actors performing in classical and contemporary theatre.

29.110 Voice and Articulation 4 Q.H.

The study of voice technique: emphasis on pitch, projection, articulation, and vocal variety. A combination of theory and practical application.

29.111 Oral Interpretation 4 Q.H.

Application of basic vocal techniques to the dramatic reading of prose, poetry, and drama. Through literary analysis the author's meaning is understood and, by means of oral reading skills, communicated to an audience.

29.112 Advanced Voice and Articulation 4 Q.H.

(Prereq. 29.110 or consent of instructor)

Development and application of vocal technique acquired in 29.110. Emphasis on vocal analysis, flexibility, and regional patterns of speech.

29.113 Effective Speaking Workshop 2 Q.H.

(Prereq. Civil Engineering only)

This course is designed to give the student an opportunity to acquire a basic understanding of the communication process and its function as a means of relating to the world, ourselves, and other people. It will examine factors in intra- and interpersonal communication, group communication, and public speaking through lectures, discussions, structured learning experiences, and written assignments.

29.114 Advanced Oral Interpretation 4 Q.H.

(Prereq. 29.111)

Opportunity to further develop oral reading skills acquired in 29.111. In addition, the course includes work with accents and dialects, study of reader's theatre, and an investigation of classical and modern philosophies of the art.

29.115 Theories of Persuasion 4 Q.H.

Surveys theoretical and conceptual approaches and research pertaining to the effectiveness of communication which is deliberately intended to induce changes in attitudes, beliefs, values and/or behavior.

29.116 Persuasive Techniques 4 Q.H.

(Prereq. 29.115 or permission)

Critical, in-depth analysis of instances of persuasion as they occur in social interaction, social movements, politics and advertising, identification of practical strategies employed, and the factors which influence the effectiveness of those strategies when persuaders attempt to influence others.

29.117 Group Discussion 4 Q.H.

Working in task groups, students are expected to explore theory and research in the area of group dynamics and apply their knowledge to the classroom experience as they work on developing skills in decision making, problem solving, membership, and leadership.

29.118 Speech Communication in Education 4 Q.H.

Through lectures, discussions, and performance projects, several activities are investigated: conference and discussion techniques in decision-making situations and as teaching techniques, personal interviews, collective bargaining, and various speech situations involving the teacher's several audiences.

29.119 Introduction to Communication Theory 4 Q.H.

This course is designed to offer basic

knowledge and understanding of the processes involved in the transference of meanings. From the problems involved in defining communication, through a discussion of the nature of communication, various models of communication are examined. The nature of theory and requirements of adequate theory are discussed, leading to an examination of various theories of human communication, including psychological, sociological, information and system theories.

29.120 Introduction to Theatre Arts 4 Q.H.
(For non-Drama majors)

A brief view of the historical development of acting, directing, and production design. Emphasis on appreciation of contemporary theatrical forms.

29.121 Theatre Appreciation 4 Q.H.
Introduction to the drama as a dynamic medium of human expression; historical development of the theatrical form. Reading and analysis of selected plays as they relate to form, genre, and style from the viewpoint of audience and artist.

29.122 Theatre Experience 4 Q.H.
Introduction to the theatre as a collaborative art form (theoretical and practical), with an emphasis upon acting, directing, designing, lighting, and the necessities of theatre economics.

29.123 Propaganda 4 Q.H.
(Prereq. 29.115 or 29.119)
A descriptive and analytical survey of propaganda techniques and devices used in a conscious attempt to manipulate and ultimately control behavior.

29.124 Reader's Theatre 4 Q.H.
A study of the skills necessary to adapt, direct, and perform short stories and novels for public presentation. How to select and work with materials for either educational and/or entertainment purposes.

29.127 The Mass and the Media 4 Q.H.
An introductory course designed to explore the many media through which man expresses himself: radio-television, film, print, music. Attention is paid to the role of the individual as a media consumer.

29.128 Contemporary Public Address 4 Q.H.
A critical study of the public address of leading contemporary speakers, representative of important political and social movements. This course seeks to help the student gain an appreciation of the dimensions and varieties of contemporary public address, broadly defined as symbolic discourse. From an understanding of various theories and approaches to public address, rhetorical situations are examined; and the use of agitative and control strategies to accomplish social change is critically evaluated.

29.129 Introduction to Communication Skills

4 Q.H.

This course is designed to give the student an opportunity to develop a basic understanding of the communication process and its function as a means of relating to the world, ourselves, and other people. It will examine factors in intra- and interpersonal communication, group communication, and public speaking through lectures, discussions, structured learning experiences, and written assignments.

29.130 Makeup 4 Q.H.
The principles of, the reasons for, and the materials used in makeup for the theatre, television, and films. The practical application of types and styles of makeup: straight, old-age, character, and corrective.

29.133 Theories of Audience Behavior 4 Q.H.
Surveying theoretical models, concepts and research, the course focuses on the role of the receiver as an active participant in the communication process. Topics covered include individual information processing, listening as a learned behavior, intra-audience effects, relationships between media and audience characteristics, dissemination and rumors and information, and the development of societal norms and mores.

29.135 Twentieth-Century European Theatre 4 Q.H.

The work of major European directors and designers who have attempted to develop viable alternatives to nineteenth-century realism. Exploration of the ideas and productions of such persons as Meyerhold, Brecht, Artaud, Grotowski, Vakhtangov, Piscator, Brook, Svoboda.

29.136 The Theatre of Expanding Consciousness 4 Q.H.

The avant-garde theatre and its background in other arts as well as in society. The historical development of the avant-garde and some of its major themes are explored. An attempt to provide the student with the necessary background for discovering enjoyment and meaning in today's emerging theatre.

29.137 Women in Western Drama 4 Q.H.
What is a woman? An examination of the way western society has answered that question as revealed in its drama, from the Grecian age to the present day.

29.140 Consultation Skills 4 Q.H.
(Prereq. 29.119, 29.129, 29.117, 29.141)

Designed to instruct students in the skills necessary for analyzing communication difficulties in industry, organizations, and groups. The course will include theory, discussion, practice, and feedback, using a case study method.

29.141 Interpersonal Communications I 4 Q.H.
A conceptual, theoretical course designed to help increase awareness of the communication process. An examination of the ways in which we relate to other individuals and factors which influence these processes.

29.142 Interpersonal Communications II 4 Q.H.
(Prereq. 29.141 or permission)

Application of concepts developed in Interpersonal Communications I. An experiential course, exploring ways of becoming more aware of one's self and one's relationships with others. An examination of various options for communicating and increasing knowledge of the group process. Enrollment limited.

29.143 Female-Male Communication 4 Q.H.
Survey of the various dimensions of female-male relationships as they are created, sustained, or disintegrated through communication transactions. Emphasis will be on the various images and stereotypes of male and female sexual identity as they affect and are affected by communication in the development of hostility, friendship, or intimacy. Temporary, permanent, and destructive female-male relations will be examined as they lead to alternate life styles.

29.150 Elementary Acting I 4 Q.H.
(Prereq. Drama major or consent of instructor)
Fundamental techniques of stage use. The actor and the stage environment. Improvisations for strengthening imagination and increasing freedom. Analysis of scripts for work on performed scenes.

29.151 Elementary Acting II 4 Q.H.
(Prereq. 29.150)
Fundamental analysis of the script, including physicalizations and vocal scoring; character analysis; scenes performed for classroom analysis.

29.152 Intermediate Acting III 4 Q.H.
(Prereq. 29.151)
Further development of the actor's tools, script and character scoring, exercises for physical and psychological freedom. In-class scenes as works-in-progress.

29.154 Rehearsal and Performance 4 Q.H.
Designed to allow the students to rehearse, perform, and produce a series of short dramatic works in which a variety of scripts and acting and directing concepts are explored under faculty guidance.

29.156 Stage and Body Movement 4 Q.H.
(Prereq. Drama major or permission of instructor)
A workshop course in movement and improvisation techniques which explore inner resources and allow the actor greater freedom of expression on the stage; analysis of various physical styles used on stage.

29.159 Theatre Games 4 Q.H.
This course offers a variety of basic dramatic, movement, and improvisational techniques that can be applied to theatrical, educational, and personal situations. Previous theatrical experience is not necessary.

29.160 Concepts of Direction 4 Q.H.
(Prereq. Drama major or permission of instructor)

Theories of dramatic presentation through analysis of selected historical developments. Purposes and techniques of theatrical direction as they relate to script analysis, production style, pictorial composition, rhythmic evolution, and emphatic responses.

29.161 Problems in Direction 4 Q.H.
(Prereq. 29.160)
Experimentation in theory related to the staging of classical and modern drama. Analysis of plays of actual production; casting, rehearsals, character interpretations. Each student is responsible for the production of a one-act play.

29.163 Play Production 4 Q.H.
The basics of play production for recreation and education leaders in schools, camps, or settlement houses. Both formal and informal dramatics activities are explored, along with the problems involved in preparing the creative, performing, design, and technical aspects of a production.

29.164, 29.165, 29.166, 29.167 Practicum in Play Production (each) 4Q.H.
Laboratory practice in technical theatre: scene building and painting, and performing backstage functions. To be repeated for credit, up to four credits.

29.170 Scenic Production 4 Q.H.
Principles which underlie the coordination and execution of scenery for the stage; examination of different kinds of scenery, tools, equipment, construction materials, and techniques; handling of scenery and basic scene painting. Laboratory work: constructing and painting scenery for University productions.

29.172 Scenic Design for the Stage 4 Q.H.
(Prereq. 29.170)
Practical problems of scene design and methods of approach. Classwork and projects in analyzing a script in terms of visual requirements; elements of design and their application to scenery; methods of inspiration; presentation of ideas including sketches, rendering, models, working drawings, and elevations; and evaluation of designs. Laboratory work includes executing scenery for University productions.

29.173 Lighting Design for the Stage 4 Q.H.
(Prereq. 29.170)
Basic principles and practices of stage lighting, including the qualities and functions of light, lighting instruments and controls, basic elec-

tricity, color in light, and analysis of the script in terms of light requirements. Students are expected to develop light plots and schedules for various kinds of stage productions. Class work includes laboratory work on lighting crews for University productions.

29.174 Scene Painting 4 Q.H.

The history of scene painting and ornament from classical to contemporary times. Studio organization, color, color theory, equipment, tools, materials, and costs involved with painting stage scenery. Projects and exercises in the use of different media, matching colors, painting of textures, light and shade, and the use of stencils and physical textures. Laboratory sessions include painting stage scenery for University productions.

29.175 Costuming for the Stage 4 Q.H.

The theoretical and practical aspects of costuming are covered through a combined lecture/laboratory format. Basic design concepts, techniques of rendering costume plates, pattern drafting, draping, fabric usage, and special effects. Particular emphasis is given to problems of costuming for high school and college theatres.

29.176 Historic Costume and Design 4 Q.H.
(Prereq. 29.175)

A survey of historic costume and civil dress through the ages of Western man. Its adaptation and relevance to the problems involved in designing for high school and college stages are the foundation for this area of study. Emphasis is on the use of research sources for design assignments within various periods.

29.177 Basics of Theatre Design and Style 4 Q.H.

Visual style and ornamentation for the director, actor, designer, and audience. Examination of the script in terms of visual presentation. Work with the basics of design in relation to theatre and the stage picture created by direction and design. Emphasis on two-dimensional techniques of presentation based on psychology of color, line, and form and its effects on an audience. Graphic projects applying various media and techniques to achieve effect or style.

29.178 Theatre Crafts 4 Q.H.

An exploration of special effects and materials used for the theatre. Puppetry construction and staging. Building handprops, masks, and wigs.

29.179 Pattern Drafting and Costume Construction 4 Q.H.

Introduction to basic skills in simple pattern drafting and construction of basic garments. Lab work provides students an opportunity to acquire the knowledge and skills with which to design and adjust simple garments. Specifically designed for non-skilled beginners.

29.180 Playwriting I 4 Q.H.

The principles and practices of modern dramatic

composition: characterization, plot, plot structure, dialogue, and other dramaturgical elements as seen in the one-act play. Writing brief scenes, the dramatic composition, and the one-act play.

29.181 Playwriting II 4 Q.H.
(Prereq. 29.180)

Continuation of 29.180.

29.185 Children's Theatre 4 Q.H.

Theories and methods of relating creative techniques to children's programs in schools, churches, and recreational facilities. Analysis of literature in preparation for production of children's plays.

29.186 Educational Theatre 4 Q.H.

Drama and drama activities in community, social, health, and educational agencies. Organizing and directing young people's theatre programs.

29.200 History of the Theatre 4 Q.H.

Development of the theatre and the drama of Greece and Rome, medieval Europe, Elizabethan and Restoration England, and seventeenth-century France; an examination of playwriting, acting styles, scene design, theatre architecture, and the relationship among these elements.

29.201 History of the Theatre 4 Q.H.

Development of the European theatre of the eighteenth, nineteenth, and early twentieth centuries; growth and development of the proscenium theatre; the emphasis upon naturalistic and realistic presentation; and theatre innovations.

29.203 The Theatre of Ibsen, Strindberg, Chekhov 4 Q.H.

Intensive study of the theatre of the three great masters of the Naturalistic movement in Europe, whose work stands as the foundation of modern drama.

29.205 The Restoration Theatre 4 Q.H.

The philosophical, social, historical, and critical influences upon the Restoration theatre and its dramatists.

29.207 New Trends in American Theatre 4 Q.H.

A survey of the evolution of theatre and drama in America during the sixties and seventies. Developments in the commercial, the nonprofit, and the experimental fields will be examined.

29.208 The Irish Theatre 4 Q.H.

Theatre and drama in Ireland from the beginnings to the present, with the backgrounds of Irish folklore and history. Particular emphasis on developments in the twentieth century.

29.210 The American Theatre 4 Q.H.

The American theatre from the Revolutionary War to the present.

29.211 The Theatre of Williams, Miller, and Albee 4 Q.H.

An intensive study of the works of three major post-World War II American playwrights.

29.212 Black Theatre in America 4 Q.H.

A survey of the history of black theatre artists in America from the time of Ira Aldridge to the present day, and of the works of black playwrights from the Harlem Renaissance to the present, with an emphasis on the period beginning with Baraka's "Dutchman."

29.213 Sexuality in the Drama 4 Q.H.

An examination of sexuality, homosexuality, deviant social behavior, and the trends toward and away from pornography in selected plays from Greek to contemporary theatre. Literary, critical, theatrical, and historical analysis.

29.230 Contemporary Theatre 4 Q.H.

The various forces that have shaped the major trends in Western theatre over the past two decades. Emphasis upon selected works and contributions of Brecht, Bolt, Miller, Wilder, Baraka, Bullins, Horowitz, the major absurdists and present experimentalists; examination of contemporary theatrical concerns with nudity, obscenity, homosexuality, and the special economic and artistic formulators of contemporary plays.

29.231 The Theatre of the Absurd 4 Q.H.

The Theatre of the Absurd as an anti-literary reflection of and reaction to life; its effects upon Western drama. Major concern with selected works and ideas of Jarry, Artaud, Camus, Sartre, Beckett, Genet, Ionesco, Pinter, Kopit, Brown, and Arrabal.

29.232 The Comic Theatre 4 Q.H.

The comic theatre from its beginnings in the ancient Greek theatre to its performances in the contemporary theatre; an examination of the comic playwright, the comic actor, the comic director—the synthesizing of the arts of the theatre to produce thoughtful as well as titillating laughter. Scripts by such playwrights as Aristophanes, Moliere, Shaw, Neil Simon; techniques of Charlie Chaplin, the Marx Brothers, stand-up comics; and directorial devices will be examined through lecture, film, records, and attendance at live performances.

29.240 Drama Criticism 4 Q.H.

An examination of both the major historical statements of drama theory and contemporary drama criticism as evidenced in journalistic play reviews. Students are required to prepare reviews of local productions.

29.270 Theatre Management 4 Q.H.

Theatre management, including problems of financing, promoting, and programming for educational, community, profit and nonprofit professional theatre.

29.281 Introduction to Communication Research

(Prereq. 29.119 or permission) 4 Q.H.

An introduction to scientific method and epistemology as it applies to the investigation of communication phenomena. Structured to

assist students in finding and critically evaluating literature dealing with factors which influence the effectiveness of communication and which may be pertinent to either academic projects or managerial decision making.

29.285 Drama Movement and Therapy 4 Q.H.

An exploration of teaching and rehabilitative methods, using the techniques of creative dramatics and dance/movement therapy. An emphasis will be placed on the exceptional child, and the physically and emotionally handicapped.

29.286 Rehabilitative and Theatrical Makeup

4 Q.H.

Use and application of makeup for corrective and rehabilitative purposes as well as for stage purposes. Special emphasis on techniques utilized to enable physically deformed individuals to achieve a facial impression of the aesthetically normal and societally acceptable. For those interested in stage impressions, emphasis on three-dimensional constructions, prosthesis with latex, beards and moustaches.

29.290, 29.291 Directed Study (each) 4 Q.H.**29.295, 29.296, 29.297, 29.298 Junior-Senior Honors Program** (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

English

Prerequisite for all English courses is a minimum of Freshman English (30.113 and 30.114) or equivalent. Please consult the English Department catalogue for more information on all courses listed. Topic courses change quarter by quarter.

30.100 Intensive English as a Second Language

Intensive review of English grammar to help students develop listening, speaking, reading, writing, and studying skills in the classroom, language laboratory, and small group tutorials.

30.101 Fundamentals of English I 4 Q.H. (Prereq. Special Placement)

Introduces principles of effective expository writing; emphasis on description, paragraph construction, and organization; review of the conventions of English usage, punctuation, and syntax; essay assignments.

30.102 Fundamentals of English II 4 Q.H. (Prereq. 30.101)

Focus on exposition, argument, and academic essay writing; instruction in writing a research paper; continued emphasis on the conventions of English usage, punctuation, and syntax; essay assignments.

30.103 Grammar for Journalists 4 Q.H.

Reviews the mechanics of newspaper and magazine prose; emphasis on grammatical forms, punctuation, spelling, effective structures, and conventional usage; exercises and essay assignments. For Journalism majors only.

30.104 Intermediate Writing 4 Q.H.

Provides writing instruction for students who wish to improve their writing skills; opportunity for students to develop their particular interests in subject matter and form.

30.106 English for International Students I (Prereq. Special Placement) 4 Q.H.

Focuses on prose literature and on descriptive, narrative, and expository techniques. Weekly papers will be aimed at broadening diction and syntactical and organizational techniques, in addition to dealing with responses to form and content.

30.107 English for International Students II (Prereq. 30.106) 4 Q.H.

Selected literature and writing assignments aimed at diction and syntactical and organizational techniques.

30.108 Creative Writing 4 Q.H.

Gives the beginning writer an opportunity to practice various forms of writing, both poetry and prose. Class discussion of student work.

30.110 Literary Analysis: Poetry 4 Q.H.

Extensive exercise in close reading of selected poems, study of critical terms, and practice in different critical approaches to poetry; examination of techniques for reading a variety of poetic texts; critical papers.

30.111 Literary Analysis: Fiction 4 Q.H.

Close reading of selected novels and short stories, study of critical terms, practice in different critical approaches to fiction; critical papers required.

30.112 Literary Analysis: Drama 4 Q.H.

Close reading of selected plays, study of critical terms, practice in different critical approaches to drama; critical papers required.

30.113 Freshman Writing 4 Q.H.

Focuses on the individual student's writing skills. Important principles of logic and rhetoric applied to exposition and argumentation; review of sentence structure, punctuation, and paragraphing; extensive reading and analysis of the essay form; theme assignments.

30.114 Introduction to Literature 4 Q.H.

An introduction to literary forms; poetry, prose fiction, and drama. Intensive reading of various forms and discussion of different approaches to literature. Students are required to write critical papers, and expected to develop techniques of research and documentation.

30.115 Great Themes in Literature 4 Q.H.

Content determined by instructor, who chooses a theme and a number of illustrative books from different periods. Students are required to write critical papers, and expected to develop techniques of research and documentation.

30.117 Topics in Fiction 4 Q.H.

Studies a particular kind of fiction, such as the novella; a problem in fiction, such as the role of the narrator; a particular group of fiction writers; or a theme in fiction.

30.118 Topics in Drama 4 Q.H.

Studies a particular kind of drama, such as comedy or tragedy; a problem in drama; a particular group of dramatists; or a theme in drama.

30.119 Topics in Poetry 4 Q.H.

Studies a particular kind of poetry, such as the sonnet or the dramatic monologue; a problem in poetry; a particular group of poets, such as the confessional poets; or a theme in poetry.

30.120 Introduction to Linguistics 4 Q.H.

Background in current linguistics. Diverse topics include the nature and origin of language, animal communication systems, prescriptive and descriptive grammar, language change, dialects, and language in literature. Reviews modern concepts of language structure: phonology, morphology, syntax, and semantics.

30.121 Foundations of the English Language

4 Q.H.

Studies the development of modern English from Anglo-Saxon beginnings; effects of Scandinavian and Norman invasions; dialect geography; evolutionary changes, word formation and borrowing; origins of writing and problems of spelling. Readings include both formal and informal writings, literary selections, wills, journals and private and public letters.

30.122 Topics in Genre

4 Q.H.

Studies several genres concurrently; or studies, cross-generically, literary modes such as satire, pastoral, or melodrama; or studies a theme in a number of different genres.

30.125 Grammars of English

4 Q.H.

Designed for students seeking a comprehensive knowledge of English grammar, this course provides a study of structure and usage in English according to traditional, descriptive, and generative (transformational) approaches.

30.126 Transformational Grammar

4 Q.H.

The theories of generative-transformational grammars by Noam Chomsky and others, and the opportunity to develop the skill with which to construct and operate specific generative-transformational grammars.

30.130 Introduction to Semantics

4 Q.H.

The relation between language and behavior, levels of abstraction in communication, habits of evaluation of linguistic phenomena, and the modification of such habits in the direction of human understanding and survival.

30.131 Topics in Linguistics

4 Q.H.

Examines closely such topics as the application of linguistics to the study of literature, problems in semantics (e.g., language in law, language and social class), or problems in American dialects.

30.141 Science Fiction

4 Q.H.*

The myths and rhetorical (scientific and pseudo-scientific) strategies of science fiction from Mary Shelley's *Frankenstein* through current authors such as Vonnegut, Bradbury, Heinlein, and Clarke.

30.142 Psychology and the Novel

4 Q.H.

Concentration on twentieth-century novels whose themes stress individual behavior and motivation, and whose form and style often try to imitate human mental and emotional processes. Includes novels by such writers as Kafka, Dostoevski, Faulkner, Conrad, and Lawrence.

30.146 Modern Bestseller

4 Q.H.

Explores the function of quest, romance, and adventure in a selection of contemporary, bestseller fiction by such authors as Hailey, Robbins, and Irving Wallace.

30.147 Topics in Science Fiction

4 Q.H.

Focuses on a single writer or group of writers

(Wells, or contemporary American science fiction); a theme (women in science fiction, the future city); or a unifying idea (time travel, utopia/dystopia).

30.148 Images of Women in Literature

4 Q.H.

Investigates the relationship between sex roles, male and female, and literary portrayals. A descriptive and evaluative examination of the archetypes depicted in literature and the "sex role problem," which includes the traditional male role. Selections represent male and female writers and provide a culturally comparative perspective. Readings include novels, plays, autobiographies, short stories, poems, as well as critical materials.

30.151 The Modern Novel

4 Q.H.

Studies the themes of important novelists of the twentieth century; analyzes styles, techniques, and trends in fiction; includes such authors as Joyce, Lawrence, Hemingway, Faulkner, and Bellow.

30.152 Modern Drama

4 Q.H.

Studies the development of drama since the late nineteenth century as a function of realism, naturalism, symbolism, and surrealism.

30.154 The Modern Short Story

4 Q.H.

Selected British and American writers of the short story, with close attention to contemporary practitioners (Salinger, Malamud, Roth), as well as to major figures (Joyce, Lawrence, Faulkner).

30.155 Contemporary Fiction

4 Q.H.

British and American writers from 1945 to the present, including such figures as Lessing, Burgess, Amis, and Powell; Pynchon, Vonnegut, Oates, and Barth. Emphasis on the experimental and modernist authors.

30.156 Fantasy

4 Q.H.

Studies in the theory and practice of fantasy as found in such authors as Swift, Carroll, Wells, and C.S. Lewis.

30.157 New Topics in Fantasy

4 Q.H.

Explores such areas as dream, nightmare, and borderline states of consciousness in the works of such writers as Poe, Tolkien, and Kafka.

30.158 Literature in Context

4 Q.H.

Attempts to put the writer in the context of a special theme. For example, the course might study a group of authors influenced by their common interest in psychoanalysis, by their social consciousness, or by an interest in the Wild West and the settlement of America.

30.159 Literature in Context

4 Q.H.

Similar to 30.158 but with different texts and contexts in a given year.

30.160 New Topics in Literature

4 Q.H.

This is a course which deals experimentally with subjects and themes such as heroes and villains, myth and folklore, or Japanese fiction since World War II.

30.161 New Topics in Literature 4 Q.H.

Similar to 30.160 but with different topics in a given year.

30.162 Major Figure 4 Q.H.

Devoted entirely to the work of one writer; specific writers vary widely and change frequently: for example, Mark Twain, Virginia Woolf, and Eugene O'Neill.

30.163 Major Figure 4 Q.H.

Similar to 30.162, but with a different writer in a given year.

30.164 Business Tradition in Literature 4 Q.H.

Examines the various literary images of the businessman as new frontier opportunities for the accumulation of wealth opened up. Biographies, autobiographies, novels, plays, and films will be examined to study the many facets of these captains of industry and to determine their impact on society.

30.165 Literature and the Law 4 Q.H.

Uses imaginative literature to investigate the problems of crime and justice as they occur throughout time, from ancient Greek tragedies to modern American novels. The readings may help the student to discover the changing nature of the criminal—hero or victim or villain—and to deal with the social, psychological, and political facts that define him.

30.166 Urban Life and Literature 4 Q.H.

The rise of the European and American metropolis has alternately been hailed by writers or condemned for its life-denying environment. In a survey highlighting such writers as Gay, Balzac, Dickens, Gissing, Ellison, and others, the urban crisis is explored for its psychological and sociological dimensions. Two main images emerge: the city as opportunity and the city as destroyer. The course also attempts to show how literary form is, in part, a response to sociological reality, and that the realistic novel's emergence may be explained in these terms.

30.167 Literature and Politics 4 Q.H.

Explores ways authors from Sophocles to Mailer represent the religious, moral, and ethical conflicts arising from the acquisition, use, and misuse of political power. The literature falls into several categories—utopian, which establishes a conflict between the ideal and the real; satirical, which threatens a power structure by exposing it to scorn; analytic, which describes the rise to and fall from power of individuals, parties, or states; and investigative, which takes the reader inside a power elite to observe its inner operations—and examines the difference between the ideal of government and its reality.

30.168 The Literature of Science 4 Q.H.

Examines the literary methods used by scientists to involve us in their experiences and discoveries. Many of the most creative minds of

science have left literary works, full of clarity, vigor, and emotive power. Explores a variety of these works from antiquity to the present to see how the creativity of the scientist is fundamentally the same as the creativity of the man of letters. Readings will be drawn from astronomy, physics, natural history, biology, mathematics, and psychology.

30.169 Language and Film 4 Q.H.

Explores the way in which film transforms the written word to a visual experience and illustrates the way in which cinematic techniques help in creating and extending the meaning of that visual experience. Such films as *Bonnie and Clyde*, *Dr. Strangelove*, and *Hospital* are among those shown during weekly screening sessions, which give students the opportunity to pursue and develop cinematic interests evolving from class discussions. Lab fee.

30.170 Survey of English Literature I 4 Q.H.

Surveys the major British writers and major literary forms and works from the Middle Ages to the end of the eighteenth century. Such writers as Chaucer, Spenser, Shakespeare, Milton, Pope, and Swift will be read and discussed.

30.171 Survey of English Literature II 4 Q.H.

Surveys the major British writers and major literary forms and works from the romantic period (ca. 1800) to the mid-twentieth century. Such writers as Wordsworth, Keats, Browning, Yeats, Lawrence, and Eliot will be read and discussed.

30.175 Contemporary American Literature

Explores the major literary movements and developments in American poetry and fiction from the Second World War to the present. Such writers as Lowell, Roethke, Plath, Pynchon, Barthelme, and Vonnegut will be read and discussed.

30.178 Shakespeare on Film 4 Q.H.

This course will examine the various treatments of Shakespeare's plays on film. It will be concerned with the technical aspects of film and how these have been used by directors to transfer Shakespeare's plays from the stage to the screen. This course does not fulfill the Shakespeare requirement for English majors. Lab fee.

30.180 Survey of American Literature I 4 Q.H.

Surveys the major American writers and major literary forms and works from the Colonial Period to the Civil War. Such writers as Taylor, Cooper, Poe, Hawthorne, Melville, and Emerson will be read and discussed.

30.181 Survey of American Literature II 4 Q.H.

Surveys the major American writers and major literary forms and works from the Civil War to the mid-twentieth century. Such writers as Whitman, Dickinson, Twain, James, Hemingway, Fitzgerald, and Faulkner will be read and discussed.

30.182 Major American Novels I 4 Q.H.

Focuses intensively on the themes, forms, and techniques of the major American novelists of the nineteenth and early twentieth centuries, such as Cooper, Hawthorne, Melville, James, and Dreiser.

30.183 Major American Novels II 4 Q.H.

Focuses intensively on the themes, forms, and techniques of the major modern novelists, such as West, Ellison, Bellow, Barth, and Hawkes.

30.184 History of Film 4 Q.H.

Traces the development of film from the silent movie era (1900-1930) to the present, showing the influence of technical advances and shifting popular tastes on that development. Important films by representative film-makers of each period will be shown and discussed. Lab fee.

30.185 Topics in Film 4 Q.H.

Focuses on a movie genre (the western, the gangster film, the thriller, e.g.), on a movie personality (an actor, writer, or director), or on a theme (women in the movies, e.g.). Lab fee.

30.186 Early American Literature 4 Q.H.

Examines American literature of the colonial and federal periods, including Bradford, Taylor, Edwards, Franklin, Irving and Cooper.

30.187 New England Renaissance 4 Q.H.

Studies the development of a native tradition in the context of democratic and romantic attitudes toward experience and the paradox these attitudes reveal. Such writers as Emerson, Thoreau, and Melville will be read and discussed.

30.189 American Realism 4 Q.H.

Examines the realistic tradition in American literature, including local color and native humor, from the end of the Civil War to the turn of the century. Such writers as Twain, James, Howells, Crane, and Norris will be read and discussed.

30.190 Modern American Literature 4 Q.H.

Explores the major literary movements and developments in American poetry and fiction from the turn of the century to the Second World War. Such writers as Anderson, Wharton, Fitzgerald, Faulkner, Frost, and Williams will be read and discussed.

30.191 Children's Literature 4 Q.H.

Studies the history of children's literature in the English language, with special attention to matters such as genre theory and critical approaches. Such works as *Alice in Wonderland*, *Uncle Remus*, *Little Women*, and *The Wizard of Oz* will be read and discussed.

30.192 Topics in Children's Literature 4 Q.H.

Focuses closely either on a specific collection of stories (Grimm's Fairy Tales, e.g.), on a specific genre (boy's books, e.g.), or on a problem or theory related to children's literature (the problem of evil or children's literature as a form of group socialization, e.g.).

30.193 Popular Culture 4 Q.H.

Surveys the development of popular culture in the United States as the living culture that arose in response to the development of a leisure-time market and the technology to reach it. The focus of the course will be on the mass media, surveyed chronologically for evidence of trends arising from changes in popular taste and technology. Among the media to be discussed are popular literature, radio, and television.

30.194 Topics in Popular Culture 4 Q.H.

Focuses on such topics as the soap opera, the western, the police story, etc., on a popular culture activity, or on a popular culture perspective.

30.195, 30.196 Freshman Honors 4 Q.H.

(Prereq. Special Placement)
Advanced placement for freshmen.

30.203 Writing for the Professions:**Health Services** 4 Q.H.

Designed to serve the professional writing needs of students in the College of Nursing and the College of Pharmacy and Allied Health Professions through instruction in formal rhetoric and practice with a variety of professional forms: lab reports, clinical evaluations, medication analyses, and HEW proposals.

30.204 Advanced Writing 4 Q.H.

(Prereq. 30.104 or permission)
A composition elective for experienced writers who wish to hone their skills; opportunity for students to develop their particular interests of subject and form.

30.205 Writing for the Professions: Business**Administration** 4 Q.H.

Designed to serve the professional writing needs of students in the College of Business Administration through instruction in formal rhetoric and practice with a variety of professional forms: letters, short memos, formal staff reports in the functional areas of accounting, personnel, marketing, finance, transportation, and insurance.

30.206 Writing for the Professions: Engineering**4 Q.H.**

Designed to serve the professional writing needs of students in the College of Engineering through instruction in formal rhetoric and practice with a variety of professional forms: description, analytical reports, systems design, lab reports, and proposal specifications.

30.207 Writing for the Professions: Criminal**Justice** 4 Q.H.

Designed to serve the professional writing needs of students in the College of Criminal Justice through instruction in formal rhetoric and practice with a variety of professional forms: incident, investigation, pre-sentence reports, memoranda, and research proposals.

30.208 Poetry Workshop 4 Q.H.

(Prereq. 30.108 or permission of instructor)

An advanced workshop course in writing and examining original student poetry. Students are expected to experiment in some established poetic forms of their own choosing, and to produce their own original work.

30.209 Fiction Workshop 4 Q.H.

(Prereq. 30.108 or permission of instructor)

An advanced workshop course in writing and examining original student fiction.

30.210 Major Early British Novelists 4 Q.H.

Surveys the early English novel by such authors as Defoe, Fielding, Smollett, Sterne, and Austen. The novels will be read and discussed to determine themes and characteristics, and to chart the development of the genre in the eighteenth century.

30.211 Major Nineteenth-Century British Novelists 4 Q.H.

Surveys the nineteenth-century English novel by such authors as the Brontës, Thackeray, Eliot, Meredith, and Hardy. The novels will be read and discussed to determine themes and characteristics, and to chart the development of the genre in the nineteenth century.

30.212 Major Twentieth-Century British Novelists 4 Q.H.

Surveys the twentieth-century English novel by such authors as Joyce, Lawrence, Woolf, and Durrell. The novels will be read and discussed with the goal of determining the characteristics and charting the development of the genre in the twentieth century.

30.213 English Drama I 4 Q.H.

Surveys representative English drama, excluding Shakespeare, from the Towneley Cycle to Sheridan. The dramas will be read and discussed to determine themes and characteristics, and to chart the development of the genre from its origins in England to the end of the eighteenth century.

30.214 English Drama II 4 Q.H.

Surveys representative English drama of the nineteenth and twentieth centuries. The dramas will be read and discussed to determine themes and characteristics, and to chart the development of the genre from the nineteenth century to the present.

30.218 Medieval English Literature 4 Q.H.

Surveys the major works of medieval English literature. Works such as *Sir Gawain*, *Piers Plowman*, and *Pearl* will be read and discussed.

30.222 Chaucer 4 Q.H.

Surveys the work of Chaucer, with particular emphasis on *The Canterbury Tales*.

30.223 Topics in Chaucer 4 Q.H.

Examines closely a particular work or group of works (such as *Troilus and Cressida*), or a theme (such as Chaucer's symbolism).

30.225 Milton 4 Q.H.

Concentration on Milton's *Paradise Lost*, with supplementary readings in his minor poetry and prose.

30.227 Topics in Medieval Literature 4 Q.H.

Focuses either on a genre (the romance of "debate" literature, e.g.), on a figure (Chaucer, e.g.), or on a theme (alchemy in medieval literature, e.g.).

30.230 Seventeenth Century English Literature 4 Q.H.

Examines major writers of the period, such as Bacon, Jonson, the metaphysical poets (Donne and Herbert, e.g.), Dryden, and Milton.

30.231 Topics in Seventeenth-Century English Literature 4 Q.H.

Examines closely either a single writer or group of writers (Dryden or the metaphysical poets, e.g.), or a topic, such as the flourishing of satire.

30.236 Eighteenth-Century English Literature 4 Q.H.

Surveys the period; includes such major writers as Pope, Addison and Steele, Swift, Goldsmith, Burns, Johnson, and Boswell.

30.237 Topics in Eighteenth-Century Literature 4 Q.H.

Examines closely such topics as a single writer or group of writers (e.g., Swift, the essayists), a genre (e.g., satire), or a theme (e.g., reason and madness).

30.240 Romantic Poetry 4 Q.H.

Surveys the work of the major romantic poets: Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.

30.241 Victorian Literature 4 Q.H.

Surveys the major literature of the period, from the works of Tennyson, Arnold, and Dickens to the works of G. M. Hopkins, Wilde, and the early writing of G. B. Shaw and Conrad.

30.242 Topics in Romantic Poetry 4 Q.H.

Examines closely a single writer or group of writers (the Keats-Shelley circles, e.g.) or a theme (poetry and revolution, the creative process, e.g.).

30.243 Topics in Victorian Literature 4 Q.H.

Examines closely a single writer or group of writers (e.g., Wilde, the fantasists) or a theme (the movement toward modernism, decadence).

30.244 World Literature I 4 Q.H.

Readings in world literature from the time of the Greeks through the Renaissance.

30.245 World Literature II 4 Q.H.

Readings in world literature from the Renaissance through the modern period.

30.246 Twentieth Century English Literature 4 Q.H.

Surveys major writing of the period, including such writers as Shaw, Beckett, Yeats, T.S. Eliot,

Auden, Conrad, Joyce, Lawrence, Greene, Lessing, Murdoch, and Fowles.

30.247 Topics in Twentieth-Century English Literature 4 Q.H.
Examines closely the work of a single author or group of authors (e.g., Lawrence, post-war authors) or a topic (forms of modernism, imperialism).

30.248 Sixteenth-Century Literature 4 Q.H.
Concentration on sonnets, love lyrics, and erotic narrative poetry, principally by Wyatt, Sidney, Marlowe, and Shakespeare.

30.249 Masterpieces of World Literature 4 Q.H.
Includes a selection of "great books," primarily by non-English authors, that have been central to the development of Western thought and culture.

30.250 Shakespeare's Comedies 4 Q.H.
Studies the romantic comedies, problem comedies, and comedies of regeneration, ranging from *The Merchant of Venice* to *The Tempest*.

30.251 Shakespeare's Tragedies 4 Q.H.
Studies the nature of the tragic hero, the questioning of social norms, and the landscape of chaos, ranging from *Julius Caesar* to *King Lear*.

30.252 Topics in Shakespeare 4 Q.H.
Examines closely such topics as the history plays, Shakespeare in performance, the Shakespearean hero, and psychological approaches to Shakespeare.

30.260 The Bible 4 Q.H.
Close study and textual analysis of selected books of the Bible. Texts are considered in their historical and literary contexts.

30.262 Approaches to Literature 4 Q.H.
Exercises and readings in ancient and modern theories of literature. Included are Marxist, Freudian, Jungian and New Critical theories, as well as selections from the criticism of Plato, Aristotle and the Romantics.

30.263 Modern Poetry I 4 Q.H.
Studies the origin and development of the modern tradition in poetry, its form and subject matter; includes such writers as Yeats, Hardy, Frost, Eliot, and Stevens.

30.264 Topics in Modern Poetry 4 Q.H.
Focuses on a particular theme (such as the poet's use of the past or his role in politics) or a particular problem in modern poetry, or a particular group of modern poets.

30.266 Myth and Archetype in Literature 4 Q.H.
Studies 20th-century theories of myth and archetype as they have influenced our understanding and analysis of works of literature.

30.272 Studies in English Literature I 4 Q.H.
A seminar on a special topic in English literature, such as color symbolism in literature or John Donne and the metaphysical poets.

30.273 Studies in English Literature II 4 Q.H.
Continuation of 30.272.

30.274 Studies in American Literature I 4 Q.H.
Studies a special topic in American literature, such as the genteel tradition or American humor.

30.275 Studies in American Literature II 4 Q.H.
Continuation of 30.274.

30.277 Topics in Literary Criticism 4 Q.H.
Studies a particular problem, method, or school of criticism, such as structuralism, mythopoeic, or archetypal criticism.

30.279 Contemporary Poetry 4 Q.H.
Focuses primarily on British and American poetry since World War II. Includes such writers as Roethke, Plath, Olson, Ammons, Hughes, and Larkin.

30.280, 30.281 Junior-Senior Seminar (each) 4 Q.H.

(Open to all upperclassmen in the College of Arts and Sciences; first preference is given to those needing the course to complete the major.) The upperclass student with a strong competence in the humanities will have the chance to devise, pursue, and develop a response to an important issue in literature, e.g., the writer and his audience, the tradition of the new, style and meaning in literature, and literature and society. Class-time emphasis will be on discussing the broader implications of the issue dealt with by the seminar, as well as on presenting independent research toward the end of the quarter. The role of the instructor will be that of moderator, research resource, and guide, rather than that of lecturer.

30.290, 30.291 Directed Study (each) 4 Q.H.

30.295, 30.296, 30.297, 30.298 Junior-Senior Honors Program (each) 4 Q.H.
For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

Modern Languages

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. If approved by the Department of Modern Languages and the Dean's Office, equivalent course work done elsewhere may be considered acceptable to satisfy these prerequisites.

The courses described immediately below are given in *English*, and no knowledge of a foreign language is required to take them. For language majors interested in obtaining major credit for any of these courses, please consult your instructor.

31.217 French Literature in Translation 4 Q.H.

An elective course for all students, offering a study of some of the most significant works of French literature in translation. The topic will vary from year to year.

31.252 The Theme of Solitude in French Literature 4 Q.H.

Course conducted in English. Texts read in English translation (those who wish to do so may read them in French.) The multiple facets of the theme of solitude will be traced from the beginnings of French literature to that of the present day. Viewed as both a source of wonder and anguish, solitude will be studied in its various manifestations, including banishment, imprisonment, expatriation, and seclusion. The phenomena of moral and spiritual solitude will be examined as well. Among authors treated are Charles d'Orleans, Du Bellay, Rousseau, Chateaubriand, Hugo, Verlaine, Mauriac, and Camus.

31.255 Masterpieces of Modern European Fiction 4 Q.H.

This course is conducted in English and will focus on modern European authors, including Dostoevski, Mann, Kafka, Proust, Gide, and Camus. Their works will be viewed as commentaries on their respective societies and, more generally, as investigations of the human condition.

31.282 French Seminar: Voltaire and Rousseau 4 Q.H.

An opportunity to meet and compare the two great figures of the 18th century. Through an analysis of their works, we will determine how, by their contrasting interests, personalities, and views of society, they contributed to fundamental changes in the political, philosophical, and literary world of their time—and ours. Class discussion, oral and written reports. Conducted in English. Offered in alternate years.

32.215 Backgrounds in Hispanic Culture I 4 Q.H.
A multimedia approach is utilized to present the rich panorama of the humanities from Altamira to modern times. A reading knowledge of Spanish is helpful, but not required, as the course is conducted in English. Field trips, concerts, guest speakers, and individual study projects

enhance this exploration of Spanish creativity.

32.216 Backgrounds in Hispanic Culture II 4 Q.H.

This course spans the time from pre-Columbian days to the present in Latin America, exploring culture, traditions, and attitudes. A multimedia approach with field trips and guest lecturers. Conducted in English.

32.217 Saints and Sinners: The Vision of Women in the Middle Ages and the Renaissance 4 Q.H.

The attainment of and the atonement for love. Society's changing attitude toward women as reflected in the literature of the times. Selected fabliaux, short stories, poems, and plays from Boccaccio, Chaucer, Ruiz, Rojas, Machiavelli, Lope de Vega, Calderon, Quevedo, Racine, Middleton; as well as women writers. Reference will be made to historical and sociological materials. This course is offered in English. All required readings are in translation.

34.215 Backgrounds in Russian Culture 4 Q.H.

Designed to offer the student a view of Russian culture and civilization. The course utilizes guest speakers, films, field trips, and discussions. Conducted in English.

34.217 The Works of Alexander Pushkin in Translation 4 Q.H.

A survey and analysis in English of Alexander Pushkin's artistic prose, lyric poetry, correspondence, friendships, and major literary influences.

34.218 Russian Literature in Translation 4 Q.H.

A companion to 34.217, this is a survey and analysis in English of some of the works of Tolstoi, Dostoevski, Chekhov, and others.

35.217 The Works of Dante in Translation I 4 Q.H.

In this course we consider briefly the cultural background and various literary schools that influenced Dante and discuss his life, his character, and minor works. Finally, we read and analyze in some detail the *Vita Nuova* and the first cantica of the *Divina Commedia*, the "Inferno." This course is intended for students of any background or major. Bilingual texts will be used so that students with a background in Italian, and others, may refer to the original for added interest and enrichment. Classes are conducted in English.

35.218 The Works of Dante in Translation II 4 Q.H.

Continuation of 35.217, but may be taken separately. The other two parts of the *Divina Commedia*, "Purgatorio" and "Paradiso," will be studied in

detail. The course is open to anyone. Bilingual texts used. Classes conducted in English.

35.280 Italian Seminar: Pirandello 4 Q.H.

By viewing reality in man's world and man's personality with strikingly new insights, Pirandello contributed a new dimension to our understanding of human nature and brought about significant changes to the traditional conception of the theatre. We will examine the originality and art of Pirandello by a close study of some of his great plays and short stories. Class discussions, oral and written reports. Conducted in English. Offered in alternate years.

French

31.201 Elementary French I 4 Q.H.

An introduction to French and French culture, through oral comprehension, speaking, reading, and writing, with practice sessions in the Language Laboratory.

31.202 Elementary French II 4 Q.H.
(Prereq. 31.201 or equiv.)

Continuation of basic language study, with practice in conversation, readings of increasing difficulty, further grammar exercises, and review sessions in the Language Laboratory.

31.203 Intermediate French I 4 Q.H.
(Prereq. 31.202 or equiv.)

Continuation of grammar, oral practice, and the reading of selected texts.

31.204 Intermediate French II 4 Q.H.
(Prereq. 31.203)

Reading of modern French prose. Continued practice in speaking and some writing.

31.205 Reading French in the Arts and Sciences
(Prereq. 31.202 or equiv.) 4 Q.H.

Designed for those students who wish to develop their reading skills, without regard to other aspects of the language such as speaking or writing. To this end, the grammar necessary for reading is stressed, together with vocabulary building. Scientific and nonscientific texts are read. This course may also provide assistance to students, graduate and undergraduate, who need to pass a reading examination to fulfill specific degree requirements. However, it should be made clear that this course is not a substitute for 31.203 and 31.204 (Intermediate French).

31.215 Introduction to the French-Speaking World 4 Q.H.

(Prereq. 31.204 or equiv.)

This course offers a cultural introduction to the French-speaking world through the study of various reading selections in the textbook *Le Monde Français*. These selections, which stress vocabulary building and proper usage of a wide variety of grammatical forms, deal with the tradi-

tional backgrounds and aspects, as well as the contemporary and "pop" aspects, of the cultural heritage of the world's French speakers. France will be the main, but not the exclusive, focus of this course.

31.227 French Composition and Conversation I
(Prereq. 31.204 or equiv.) 4 Q.H.

For qualified students who wish to work on improving their proficiency in speaking and writing French through oral reports, class discussions, compositions, and an advanced review of fundamentals. Grammar work will focus on the students' particular needs as well as the nuances of the language. Varied readings in a range of styles—popular to literary—will provide insight into French life and culture. Conducted in French.

31.228 French Composition and Conversation II
(Prereq. 31.227 or equiv.) 4 Q.H.

A continuation of French 31.227, with emphasis on individual work, oral presentations, discussions, related grammar, and analysis of readings. Conducted in French.

31.229 Advanced French Proficiency I 4 Q.H.
(Prereq. French Composition and Conversation I and II or equiv.)

Emphasis is on further vocabulary building and mastery of fine points of grammar through written composition, prepared oral reports, and reading and discussion of articles from current periodicals. Special attention is given to the latest trends in spoken French, the study of idioms and proverbs, as well as selected examples of "argot" (slang).

31.230 Advanced French Proficiency II 4 Q.H.
(Prereq. French Composition and Conversation I and II or equiv.)

This course is the continuation of 31.229. In addition to further study in the areas covered in course 31.229, each student is expected to pursue one major project throughout the course, to be completed at the end of the quarter—such as planning and writing an original French magazine with one article to be submitted each week of the term.

31.231 Masterpieces of French Literature I
(Prereq. 31.204 or equiv.) 4 Q.H.

French literature from the Middle Ages through the eighteenth century. Some of the most significant works of French literature are examined to provide students the opportunity to improve their French reading, speaking, and writing skills; to introduce them to aspects of literary analysis; and to view the masterpieces studied within their historical and literary contexts so as to provide an in-depth examination of their individual significance. Classes will be conducted predominantly in French.

31.232 Masterpieces of French Literature II

(Prereq. 31.204 or equiv.) 4 Q.H.

Continuation of 31.231, dealing with literature from the nineteenth century to the present.

31.243 French Classicism I

(Prereq. 31.232 or equiv.) 4 Q.H.

A study of the nondramatic literature of seventeenth-century France from the baroque through the classical periods. The course will study a rich and diverse body of writing encompassing philosophy, poetry, the fable, the novel, and epistolary writing. Among the authors treated are Descartes, Pascal, La Rochefoucauld, La Fontaine, Boileau, Mme. de Sévigné, and Mme. de La Fayette. Offered every other year.

31.244 French Classicism II

(Prereq. 31.232 or equiv.) 4 Q.H.

A study of the dramatic literature of seventeenth-century France, from the baroque through the classical periods. Tragedy will be studied in the works of Corneille and Racine; comedy, in those of Molière. Offered every other year.

31.245 French Literature of the Eighteenth**Century I** 4 Q.H.

(Prereq. 31.232 or equiv.)

The eighteenth century in France, known as the "Age of Enlightenment," was an age of challenge to established authority in all areas, and an age of changing ideas and ideals. This intellectual and political vitality is reflected in the representative works of Marivaux, Montesquieu, Prévost, and Voltaire. Class discussions, oral and written reports. Conducted in French, but English is allowed. Offered every other year.

31.246 French Literature of the Eighteenth**Century II** 4 Q.H.

(Prereq. 31.232 or equiv.)

Toward the latter half of the century we begin to see both the achievements brought about by the spirit of enlightenment and at the same time the awakening of the romantic sensibility, particularly in such authors as Diderot, Rousseau, St. Pierre, Laclos, and Beaumarchais. Class discussions, oral and written reports. Conducted in French, but English is allowed. Offered in alternate years.

31.247 French Literature of the Nineteenth**Century I** 4 Q.H.

(Prereq. 31.232 or equiv.)

Romanticism is treated as a major cultural phenomenon affecting man's view of his world and the way he expresses experience. In this context, the course examines romanticism in poetry and drama, as well as its continuation into the realist novel. Among the authors read are Victor Hugo in poetry and the drama, and Honoré de Balzac in the novel. In addition there are selections from other writers who represent

aspects of romanticism and realism. Conducted principally in French. Offered every other year.

31.248 French Literature of the Nineteenth Century II

4 Q.H.

(Prereq. 31.232 or equiv.)

The reaction against romanticism: aestheticism and personal modes of expression in contrast to the enthusiasm of the early romantics. The course deals with a novel by Gustave Flaubert and the verse of Charles Baudelaire in *Les Fleurs du mal*, and the poets who followed in Baudelaire's footsteps. Flaubert and Baudelaire are seen as precursors of modern literature. Conducted principally in French. Offered every other year.

31.249 French Literature of the Twentieth Century I

4 Q.H.

(Prereq. 31.232 or equiv.)

A study of the major movements in the narrative and dramatic prose writers prior to World War II, including Alain-Fournier, Proust, Claudel, Gide, Mauriac, and Saint-Exupéry. Students are required to read a work from each author, discuss it in class, and present oral and written reports. Conducted in French, but English may be used. Offered in alternate years.

31.250 French Literature of the Twentieth Century II

4 Q.H.

(Prereq. 31.232 or equiv.)

The trends in postwar fiction, with particular consideration of the struggle of man to find meaning in an absurd world. Analysis of significant works by Giraudoux, Montherlant, Sartre, Camus, Anouilh, Ionesco, and Beckett. Oral and written reports, class discussions. Conducted in French, but English may be used. Offered in alternate years.

31.280 Seminar: Critical Methodology and Practice in French Literature

4 Q.H.

(Prereq. Excellent reading knowledge of French)

The seminar treats one modern French writer in terms of a critical methodology developed in the first part of the seminar based on modern critical practice.

31.281 Seminar: Trends in Modern French Literature

4 Q.H.

(Prereq. Excellent reading knowledge of French)

The seminar examines a trend in modern French literature and develops a critical methodology useful for this analysis.

31.290, 31.291, 31.292, 31.293, 31.294 Directed Study

4 Q.H.

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately covered by existing courses. Priority is given to language majors, and to juniors and seniors.

31.295, 31.296, 31.297, 31.298 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

Spanish

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere may be considered acceptable to satisfy these prerequisites.

32.200 Intensive Spanish 8 Q.H.

This course will encompass the same material covered in 32.201 and 32.202. Students with language-learning ability and a commitment to the study of foreign languages are encouraged to take the course. Students will be expected to assimilate the material at an accelerated pace. This is a two-sequence course; students *must* enroll in *both* sequences. Satisfactory completion of this course will enable the student to take 32.203 if he/she wishes.

32.201 Elementary Spanish I 4 Q.H.
Presentation of essentials of correct usage through acquisition of basic skills in reading, writing, speaking, and aural comprehension.

32.202 Elementary Spanish II 4 Q.H.
(Prereq. 32.201 or equiv.)
Continuation of language instruction with increasing attention to vocabulary and skills relevant to persons who wish to become involved with the Hispanic world.

32.203 Intermediate Spanish I 4 Q.H.
(Prereq. 32.202 or equiv.)
Completion of basic grammatical usage. Reading of contemporary Hispanic plays; oral and written communication based upon assigned readings.

32.204 Intermediate Spanish II 4 Q.H.
(Prereq. 32.203 or equiv.)
Intensive reading of topics of current interest. Conversation practice utilizing skills acquired in previous course work and composition practice based upon varied assigned topics.

32.209 Conversational Spanish I 4 Q.H.
(Open to nonmajors only)
(Prereq. 32.204 or equiv.)
Emphasis on helping students develop the ability to speak and comprehend Spanish. Particularly able students may be accepted after having completed only 32.203. In this case, 32.209 may be used to satisfy the language requirement.

32.210 Conversational Spanish II 4 Q.H.
(Open to nonmajors only)
(Prereq. 32.209 or equiv.)
Continuation of 32.209, with continuing emphasis on the development of oral facility in

Spanish. Particularly able students may be accepted after having completed only 32.204.

32.227 Spanish Composition and Conversation I (Prereq. 32.204 or equiv.) 4 Q.H.
Practice in writing and speaking Spanish, including written and oral resumes, prepared speeches and themes, and impromptu speaking and writing. A review of the more subtle problems of grammar.

32.228 Spanish Composition and Conversation II (Prereq. 32.227 or equiv.) 4 Q.H.
Further practice in oral and written Spanish; continued study of problems of advanced Spanish grammar.

32.229 Advanced Spanish Proficiency I 4 Q.H.
(Prereq. consent of instructor)
Designed for those preparing to enter the teaching profession, as well as qualified advanced students. Advanced elements of Spanish syntax, with emphasis upon achieving superior speaking, reading, and writing skills.

32.230 Advanced Spanish Proficiency II 4 Q.H.
(Prereq. 32.229 and consent of instructor)
Continuation of aims and goals of 32.229.

32.231 Masterpieces of Spanish Literature I (Prereq. 32.204 or equiv.) 4 Q.H.
An introductory course tracing the development of Spanish literature from its beginnings in the Middle Ages (las jarchas, *El poema del Cid*, *El libro de buen amor*, *La Celestina*, etc.) through the Renaissance and Baroque period or Golden Age (Garcilaso de la Vega, the picaresque novel, the mystics, Cervantes, Lope de Vega, Calderon, etc.). Classes are conducted in Spanish.

32.232 Masterpieces of Spanish Literature II (Prereq. 32.204 or equiv.) 4 Q.H.
A continuation of 32.231, surveying the literature of 18th-, 19th-, and 20th-century Spain. Included are the literary movements of romanticism, realism, and the generation of '98. Classes are conducted in Spanish.

32.239 Spanish Literature of the Middle Ages (Prereq. 32.232 or equiv.) 4 Q.H.
Selections from the major works of the Middle Ages, from the *Poema del Cid* to the *Libro de buen amor*. Conducted in Spanish.

32.241 Spanish Literature of the Fifteenth and Sixteenth Centuries 4 Q.H.
(Prereq. 32.232 or equiv.)
Selections from the major works of the fifteenth and sixteenth centuries. Some of the works to be considered are *La Celestina*, *Lazarillo de Tormes*, and *el Romancero*. Conducted in Spanish.

32.243 Cervantes and His Times 4 Q.H.
(Prereq. 32.232 or equiv.)
Selections from Cervantes' minor works (the *Entremeses* and the *Novelas ejemplares*). Emphasis on *Don Quixote*, Spain's greatest literary masterpiece. Conducted in Spanish.

32.244 Spanish Golden Age Theatre 4 Q.H.
(Prereq. 32.232 or equiv.)

Plays by the outstanding dramatists of the 17th century: Lope de Vega, Calderon de la Barca, Tirso de Molina, Ruiz de Alarcon, and others. Conducted in Spanish.

32.247 Spanish Literature of the Nineteenth Century I 4 Q.H.

(Prereq. 32.232 or equiv.)
Readings in the prose, poetry, and drama of the romantic period, including selections from el Duque de Rivas, Larra, Espronceda, Zorrilla, and Becquer. Conducted in Spanish.

32.248 Spanish Literature of the Nineteenth Century II 4 Q.H.

(Prereq. 32.232 or equiv.)
A study of some of the major novelists of the second half of the 19th century, such as J.M. de Pereda, Juan Valera, Emilia Pardo Bazan, and B. Perez Galdos. Conducted in Spanish.

32.249 Spanish Literature of the Twentieth Century 4 Q.H.

(Prereq. 32.232 or equiv.)
Selections from the writings of the Generation of '98: Unamuno, Valle-Inclan, Pio Baroja, Benavente, Azorin, and the Machado brothers.

32.250 Spanish Literature of the Twentieth Century 4 Q.H.

(Prereq. 32.232 or equiv.)
Prose and poetry of modern writers, such as Ortega y Gasset, Perez de Ayala, Garcia Lorca, Juan Ramon Jimenez, Gironella, and Jose Cela.

32.251 Latin-American Literature 4 Q.H.

(Prereq. 32.232 or equiv.)
Early Latin-American literature; the literature of the colonial period and the early nineteenth century, based primarily on selections from an anthology.

32.252 Latin-American Literature 4 Q.H.

(Prereq. 32.232 or equiv.)
Modern Latin American literature; readings from nineteenth and twentieth-century prose and poetry.

32.280 Spanish Seminar 4 Q.H.

This course is designed primarily for majors who have progressed to the upper-level literature courses in Spanish. However, non-majors who show exceptional background may be admitted with the instructor's permission. The course will focus upon a narrowly defined theme (i.e., a single author, a single work, or a single theme), which students will be asked to explore in depth; students are expected to present a final paper based upon individual research.

32.281 Seminar in Spanish Literature 4 Q.H.

(Prereq. consent of instructor)
An upper-level literature course, designed primarily for majors, although non-majors who show exceptional background in Spanish may be admitted. Students will be expected to read a

selected group of Galdos' novels, and the class meetings will concentrate on a detailed discussion and analysis of the works read. There will be collateral readings as well, and a final paper on a topic to be selected by the student.

32.282 Seminar in the Contemporary Spanish Theater 4 Q.H.

(Prereq. 32.232 or permission of instructor)
In contrast to the typical bourgeois theater of consumption in Spain, there exists a number of dramatists committed to revealing the tragic social and existential aspects of the human condition. Emphasis will be placed on authors such as Vallejo, Sastre, the members of the *generación realista* and the "underground" playwrights. Classes will be conducted in Spanish. Class participation as well as oral and written projects required. Alternates yearly with 32.281.

32.290, 32.291, 32.292, 32.293, 32.294 Directed Studies 4 Q.H.

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately covered by existing courses. Priority is given to language majors, and to juniors and seniors.

32.295, 32.296, 32.297, 32.298 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

German

Prerequisites listed for Modern Languages are based on current course numbers at North-eastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

33.201 Elementary German I 4 Q.H.

Designed to provide instruction in the basic grammatical structure of German through practice in the language skills of listening comprehension, speaking, reading, and writing. Instruction is provided in the classroom setting and the Language Laboratory. No previous study of German is necessary.

33.202 Elementary German II 4 Q.H.

(Prereq. 33.201 or equiv.)
Continuation of 33.201. Emphasis is on helping students to increase their knowledge of the basic grammatical structure of German and develop additional flexibility in the four language skills.

33.203 Intermediate German I 4 Q.H.

(Prereq. 33.202 or equiv.)
Offers a comprehensive review and reinforce-

ment of the major aspects of German grammar and usage. Continues to explore the four major skills of listening comprehension, speaking, reading, and writing. Introduces the student to the reading of contemporary literary texts, including a full-length play—*Biedermann und die Brandstifter* by the Swiss playwright Max Frisch.

33.204 Intermediate German II 4 Q.H.
(Prereq. 33.203 or equiv.)

Aims at helping students enlarge vocabulary and develop increased flexibility in the four basic language skills. Completion of grammar review, continued exposure to modern literary texts. One full-length play is read—*Der Besuch der alten Dame*, by the contemporary Swiss dramatist Friedrich Dürrenmatt. Successful completion of this course entitles the student to choose from among the upper-level course offerings in the areas of German literature and/or composition and conversation.

33.207 Scientific and Professional German 4 Q.H.
(Prereq. 33.204 or equiv.)

Review of grammar and syntax; advanced readings in expository German. Articles dealing with chemistry, physics, mathematics, biology, and other disciplines in keeping with the students' major fields.

33.227 German Composition and Conversation I 4 Q.H.
(Prereq. 33.204 or equiv.)

Aims at helping students develop facility in speaking and writing German. Stresses active use of the language. Practice in listening comprehension through German language films or tape-recorded interviews with native German speakers. Expansion of vocabulary through guided group discussions on topics of general interest. Opportunity for students to develop language skills in areas of individual interest through preparation of oral reports in German on topics of their own choosing. Compositions assigned on a weekly basis. Review of grammar as needed. Utilization of Language Laboratory.

33.228 German Composition and Conversation II 4 Q.H.
(Prereq. 33.227 or equiv.)

Course content and format similar to 33.227. This course may be taken before 33.227.

33.229 Advanced German Proficiency I 4 Q.H.
(Prereq. 33.227, 33.228, or consent of instructor)

Intensive training in spoken and written German with the aim of providing students an opportunity to increase vocabulary and develop flexibility in the use of the language. Student-led discussions of German society and current affairs based on readings of current journals and periodicals. Weekly written assignments. Review and practice of grammar where necessary.

33.231 Masterpieces of German Literature I 4 Q.H.
(Prereq. 33.204 or equiv.)

Includes a survey of the major trends in the

development of German literature from the *Hildebrandslied* to Martin Luther. In addition, reading of selected works of major authors of the 20th century such as Hauptmann, Kafka, Mann, Brecht, Dürrenmatt, and Boll. Choice of works to be read in a particular term will be based partially on theatre performances of film showings planned in the Boston area. Class attendance of these performances is anticipated. Recommended as an introductory step to literature courses 33.245 and above. Offered every other year, alternating with 33.232.

33.232 Masterpieces of German Literature II 4 Q.H.
(Prereq. 33.204 or equiv.)

Includes a survey of the major trends in the development of German literature from Martin Luther to the present, including selected works of major authors of the 19th and 20th centuries. Choice of works to be read in a particular term will be based partially on theatre performances or film showings planned in the Boston area. Class attendance of these performances is anticipated. Recommended as an introductory step to literature courses 33.245 and above. Offered every other year, alternating with 33.231. May be taken before 33.231.

33.245 Classical Period of German Literature 4 Q.H.
(Prereq. 33.232 or equiv.)

Background and general survey of the period from 1750 to 1800, with particular emphasis on the works of Lessing and Schiller. Among the dramas read are Lessing's *Minna von Barnhelm* and *Nathan der Weise*; and Schiller's *Maria Stuart* and *Die Jungfrau von Orleans*. Lectures (in German) and reports.

33.246 The Works of Goethe 4 Q.H.
(Prereq. 33.232 or equiv.)

Drama, prose writing, and lyric poetry of Goethe, *Faust*, Part I, *Hermann und Dorothea*, *Egmont*, and *Iphigenie auf Tauris*. Lectures (in German) and reports.

33.247 German Literature of the Nineteenth Century 4 Q.H.
(Prereq. 33.232 or equiv.)

Background and general survey of German literature of the nineteenth century, with particular attention to prose and lyric poetry. The lyric poetry includes poems of all the important romantic poets, beginning with Hölderlin, Tieck, Novalis, and extending through Mörike. Among the prose works discussed are Novellen by Eichendorff, Tieck, Chamisso, Kleist, Fougue, Keller, Meyer, and Ludwig. Lectures (in German) and reports.

33.248 German Drama of the Nineteenth Century 4 Q.H.
(Prereq. 33.232 or equiv.)

Dramas read are selected from Germany's foremost dramatists of the nineteenth century, including Kleist, Hebbel, Grillparzer, and Ludwig. Lectures (in German) and reports.

33.249 German Literature of the Twentieth Century 4 Q.H.

(Prereq. 33.232 or equiv.)

Lyric poetry and prose works of important German writers of the twentieth century, including Schnitzler, Hauptmann, Mann, and Kafka. Lectures (in German) and reports.

33.250 German Drama of the Twentieth Century 4 Q.H.

(Prereq. 33.232 or equiv.)

Plays selected from those by important dramatists of the twentieth century, including Schnitzler, Hauptmann, Sudermann, Hofmannsthal, Wedekind, Kaiser, Toller, and Brecht. Lectures (in German) and reports.

33.251 The German Lyric 4 Q.H.

(Prereq. 33.232 or equiv.)

A survey of the German lyric from the twelfth century to the present. Analysis and interpretation of representative selections from major lyric poets such as Walther von der Vogelweide, Gerhard, Fleming, Gryphius, Klopstock, Claudius, Goethe, Schiller, Hölderlin, Eichendorff, Brentano, Heine, Mörike, Storm, Meyer, Rilke, and Brecht. Background of the development of the German lyric, movements, and types. Class discussions and reports.

33.252 The Dramatic Works of Franz Grillparzer 4 Q.H.

(Prereq. 33.232 or equiv.)

Reading, analysis, and interpretation of representative works of Franz Grillparzer, Austria's greatest dramatist: *Sappho, Des Meeres und der Liebe Wellen, Der Traum ein Leben, König Ottokars Gluck und Ende*, and the novella, *Der arme Spielmann*. Collateral readings, discussions, and reports.

33.290, 33.291, 33.292, 33.293, 33.294 Directed Studies 4 Q.H.

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately covered by existing courses. Priority is given to language majors, and to juniors and seniors.

33.295, 33.296, 33.297, 33.298 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

Russian

Prerequisites listed for Modern Languages are based on current course numbers at North-eastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

34.201 Elementary Russian I 4 Q.H.

Essentials of grammar, practice in pronunciation, progressive acquisition of a basic vocabulary, idiomatic expressions.

34.202 Elementary Russian II 4 Q.H.

(Prereq. 34.201)

Continuation of grammar study; oral and written exercises.

34.203 Intermediate Russian I 4 Q.H.

(Prereq. 34.202)

Designed to help further the student's knowledge of Russian through oral and written work; the study of grammar and reading texts of moderate difficulty.

34.204 Intermediate Russian II 4 Q.H.

(Prereq. 34.203)

Continuation of work and aims of 34.203.

34.207 Scientific Russian 4 Q.H.

(Prereq. 34.204 or equiv.)

Readings of Russian texts in mathematics, physics, chemistry, astronomy, biology, and medical science. Designed to help prepare the student for the departmental reading examination in his/her chosen field. As far as possible, texts are selected on the basis of the students' needs and interests.

34.227 Russian Composition and Conversation I 4 Q.H.

(Prereq. 34.204 or equiv.)

Designed to assist students in developing skills in speaking and writing by means of detailed grammar review and extensive use of audiovisual media. Conducted in Russian.

34.228 Russian Composition and Conversation II 4 Q.H.

(Prereq. 34.227 or equiv.)

A continuation of 34.227 with an increased emphasis on speaking the colloquial Russian idiom. Conducted in Russian.

34.229 Advanced Russian Proficiency I 4 Q.H.

(Prereq. 34.228 or equiv.)

Emphasizes speaking and writing skills through the study of Russian word formation and derivation. Weekly compositions or oral reports will be required. Conducted in Russian.

34.230 Advanced Russian Proficiency II 4 Q.H.

(Prereq. 34.229 or equiv.)

Emphasizes speaking and writing skills through the study and use of Russian idioms and colloquialisms. Conducted in Russian.

34.233 Stylistics and Advanced Grammar Analysis I 4 Q.H.

(Prereq. 34.204 or consent of instructor)

Designed for students pursuing a major or minor in the Russian language; focuses on modern usage of the Russian language through newspaper and magazine articles and short stories.

34.234 Stylistics and Advanced Grammar Analysis II 4 Q.H.

(Prereq. 34.233 or consent of instructor)

Continues goals of 34.233 and also focuses on

helping students improve listening comprehension through the use of extensive laboratory work.

34.247 Russian Short Stories of the Nineteenth Century 4 Q.H.

(Prereq. 34.204 or equiv.)

Detailed analysis of selected representative short stories read in Russian; study of the development of this genre.

34.251 Russian Expository Prose 4 Q.H.

(Prereq. 34.204)

Selected readings of lectures, speeches, essays, and critical studies by outstanding Russian scholars.

34.253 Russian Folklore 4 Q.H.

(Prereq. 34.204)

Various genres of Russian folk literature read in Russian. Readings are supplemented with lectures and tape recordings.

34.254 Russian Poetry 4 Q.H.

(Prereq. 34.204)

The major works of important classical and modern poets read in Russian and analyzed.

34.290, 34.291, 34.292, 34.293, 34.294 Directed Studies 4 Q.H.

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately covered by existing courses. Priority is given to language majors, and to juniors and seniors.

34.295, 34.296, 34.297, 34.298 Junior-Senior Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

Italian

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

35.201 Elementary Italian I 4 Q.H.

For the beginner who wants instruction in the essentials of Italian grammar and the opportunity to practice speaking and reading the language.

35.202 Elementary Italian II 4 Q.H.

(Prereq. 35.201 or equiv.)

Continued study of grammar and basic language skills. Practice in more advanced conversation and reading.

35.203 Intermediate Italian I 4 Q.H.

(Prereq. 35.202 or equiv.)

Review of grammar. Progressively more intensive practice in oral and written communication. Reading will be from selected modern texts.

35.204 Intermediate Italian II 4 Q.H.

(Prereq. 35.203 or equiv.)

Review of grammatical difficulties, with attention given to current idiomatic forms. Greater emphasis on self-expression. Reading of short stories or a modern novel.

35.227 Italian Composition and Conversation I

(Prereq. 35.204 or equiv.) 4 Q.H.

For students who have mastered the fundamentals of the language. There will be no study of grammar as such. The course aims at helping students strengthen speaking and writing ability through an analysis of the language, oral and written reports, and general discussions on a variety of topics. Conducted entirely in Italian.

35.228 Italian Composition and Conversation II

(Prereq. 35.227 or equiv.) 4 Q.H.

Continuation of 35.227, with stress on individual work, free discussions, and compositions. Conducted entirely in Italian.

35.231 Masterpieces of Italian Literature I 4 Q.H.

(Prereq. 35.204 or equiv.)

Introductory course in Italian literature covering the *Trecento* to the seventeenth century. An analysis will be made of major trends and writers beginning with the *doce stil nuovo*, Dante's *Vita Nuova*, and continuing with readings from Petrarca's *Canzoniere*, Boccaccio's *Decameron* and Machiavelli's *La Mandragola*. Discussion of the readings, oral and written reports. Conducted basically in Italian, but students are allowed to express themselves in English.

35.232 Masterpieces of Italian Literature II

(Prereq. 35.204 or equiv.) 4 Q.H.

Continuation of 35.231, but may be taken separately. This course concentrates on authors from the eighteenth to the twentieth centuries, such as Goldoni, Leopardi, Verga, Pirandello, Moravia, Levi and Buzzati. A novel, a play, or poetry selections from each author will be discussed. Oral and written reports. Conducted basically in Italian, but students may use English.

35.249 Italian Literature of the Twentieth Century I

(Prereq. 35.232 or equiv.) 4 Q.H.

Reading and discussion of some of the novels, plays, and poems from a variety of literary trends and styles that evolved between the turn of the century and World War II. Among the authors studied are Verga, Pascoli, D'Annunzio, Pirandello, Deledda, and Svevo. Oral and written reports. The course will be conducted basically in Italian, but students may use English. Offered in alternate years.

35.250 Italian Literature of the Twentieth**Century II**

4 Q.H.

(Prereq. 35.232 or equiv.)

The postwar period to the present. Many important authors have arisen since the early forties, and their books reflect the preoccupations, moods, and aspirations of our changing times. Among the writers considered in this course are Moravia, Silone, Vittorini, Pavese, Guareschi, Buzzati, Sciascia, Ungaretti, Montale, and Quasimodo. Oral and written reports are required. English may be used, but the course will be conducted basically in Italian. Offered in alternate years.

35.290, 35.291, 35.292, 35.293, 35.294 Directed**Studies**

4 Q.H.

Directed Studies offer students a way of going beyond work given in the regular curriculum and may also serve as a means to complete major or minor requirements in certain situations. Directed Studies will not be given in areas adequately covered by existing course. Priority is given to language majors, and to juniors and seniors.

35.295, 35.296, 35.297, 35.298 Junior-Senior**Honors Program**

(each) 4 Q.H.

For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

Journalism

Minimum prerequisites for all courses in Journalism are 30.113 and 30.114 or their equivalent.

38.101 History and Principles of Journalism

4 Q.H.

(Prereq. Junior standing or consent of instructor) Development of American journalism from European and English beginnings. The problems and contributions of the "Colonial Press," the Revolutionary War period, the "Party Press," the "Penny Press" and the leading contributions to early American journalism. The evolution of freedom of the press and the concurrent responsibility of the press media. Some writing required.

38.102 History and Principles of Journalism

(Prereq. 38.101)

4 Q.H.

A continuation of 38.101 from mid-nineteenth century. America's great personal journalists and mass circulation "giants" and their contributions: Greeley, Bennett, Raymond, Dana, Grady, Nelson, Ochs, White, Medill, Pulitzer, Hearst, Scripps, Howard, McCormick, and others. The relationships of journalism to such events as the Civil War, the Spanish-American War; the unfolding principles. Some writing required.

Portuguese

36.101 Elementary Portuguese I

4 Q.H.

Essentials of grammar; practice in pronunciation; progressive acquisition of a basic vocabulary and idiomatic expressions.

36.102 Elementary Portuguese II

4 Q.H.

(Prereq. 32.101 or equiv.)

Continuation of grammar studies, oral and written exercises.

38.103 Fundamentals of Newswriting

4 Q.H.

(Prereq. 30.113, 30.114, or equiv.)

Functions of the editorial department and procedures in obtaining and writing news stories. Extensive practice in writing news stories.

38.104 Fundamentals of Newswriting

4 Q.H.

(Prereq. 38.103 or consent of instructor)

Problems of reporting and newswriting with written assignments in various types of spot news reporting.

38.105 Techniques of Journalism

4 Q.H.

(Prereq. 38.104 or consent of instructor)

Advanced practice in writing news stories along with editorials, feature stories, criticisms, and other assignments.

38.106 Techniques of Journalism

4 Q.H.

(Prereq. 38.105 or consent of instructor)

Editing the news, with practice in copy editing, headline writing, and newspaper makeup.

38.107 The Press and Society

4 Q.H.

(Prereq. 38.106 Journalism seniors only)

The role of the press media in American society, both conceptually and practically. Conceptually, the meaning of freedom of the press is explored

through study and discussion of the evolving First-Amendment interpretations of the United States Supreme Court. Practically, a study project requires each student to make an intensive analysis of an individual newspaper in the context of the particular segment of society that it serves.

38.108 The Press and Society 4 Q.H.
(Prereq. 38.107)

The role of the press media in American society continued, with particular reference to the legal problems of libel, slander, and invasion of privacy; the balance between private rights and the public's "need to know"; the ethical responsibilities of the press media. A study project involving a practical media problem is required.

38.112 Magazine Writing 4 Q.H.
(Prereq. 38.104)

Writing and free-lancing magazine articles. Analyzing magazines as markets. Selecting the best feature format—how-to-do-it, profile, personal experience, human interest or celebrity interview, success story, interpretive or investigative pieces, and others. Publishing a picture booklet as a class project.

38.121 Television Newswriting 4 Q.H.
(Prereq. Consent of instructor)

Techniques of writing for television news as opposed to writing for other news media. The marriage of script to various video outputs; importance of the writer-reporter in his/her new roles both as a field-producer and a writer-producer; terms and language used in the production of TV news shows. Actual individual production of student news shows; field trips to TV stations; guest lecturers from the TV news media.

38.122 Television News Production 4 Q.H.
(Prereq. Consent of instructor)

An in-depth study of the techniques and language used by the electronic journalist and the TV news producer. The students will have the opportunity to learn how to build a TV news show based on studies of sight, sound, and motion derived from film, videotape, slides, photos, tape recorders, and other tools used world-wide in television news production.

38.130 Advanced Reporting 4 Q.H.

(Prereq. Consent of instructor)

All over the country, increasing numbers of special teams are being utilized to handle investigative reporting. This course covers the daily press, but also delves into the techniques used by radio-TV, the underground press, wire services, suburban weeklies, and magazines. Students are expected to participate in a selected controversial project and produce a series for publication and broadcast.

38.135 Journalism and the Mass Media 4 Q.H.

Includes a series of seminars featuring well-known professionals from major newspapers, radio-TV stations, wire services, magazines, photography, and public relations. An up-to-date, in-depth exploration of techniques and theories used in various media. Instructors include many award winners and even Pulitzer Prize recipients. The course is sponsored by the New England Chapter of Sigma Delta Chi, society of professional journalists, for the benefit of its journalism scholarship program at the University.

38.201 Basic Photojournalism 4 Q.H.
(Prereq. 38.103)

Designed to give students the opportunity to acquire a basic knowledge of how to "tell a story" through a camera. Elementary darkroom procedures will be covered along with cropping, assignment techniques, classroom theory, and photo caption methods.

Economics

Unless otherwise stated there are no prerequisites for advanced economics courses. Exceptions are made at the discretion of the instructor.

39.105 Principles of Economics 4 Q.H.

Development of macroeconomic analysis; review of national income concepts; national income determination, fluctuation, and growth; role of the banking system and the Federal Reserve System; government expenditures and taxation; international trade; balance of international payments.

39.106 Principles of Economics 4 Q.H.

The role of a market pricing system, demand and supply, in determining the allocation of resources to competing uses and why this system may not function adequately in certain areas. Application of economic principles to private and public problems in such areas as pollution, poverty, and racial discrimination.

39.115 Principles and Problems of Economics

4 Q.H.

An introduction to the conceptual aspects of economics; the flow of national income; economic growth and fluctuation; the role of money and banking; monetary and fiscal policies. Emphasis on assisting students in developing conceptual tools for use in the analysis of economic problems facing modern society.

39.116 Principles and Problems of Economics

4 Q.H.

Development of basic theory of demand, supply, and market price. Applications to selected microeconomic problems such as basic economics of monopoly and competition, poverty, race and discrimination, urban affairs, pollution, and other problems which relate to the role of the pricing system in resource allocation and income distribution.

39.130 Medical Economics

4 Q.H.

Examination and discussion of the following topics: health-care trends in the United States, causes for increases in medical-care costs, supply and training of health-care personnel, the nation's need for physicians, nurses, pharmacists, and other allied health personnel, the quality of medical care, economics of health insurance plans, consumer demand for health care, medical facilities, professional personnel, and semiprofessional personnel.

39.140 Economics of Crime

4 Q.H.

Theoretical and empirical analysis of the economic causes of criminal behavior will be presented. The social costs of crime and its prevention will be covered, and techniques for designing optimum law enforcement policies will be developed.

30.150 Economics of World Energy and Primary Resources

4 Q.H.

Investigates economic, political, and historical backgrounds of the energy and other resources problems. Future impact of primary resources limitations on United States and world economics will be analyzed. Feasibility studies of resource substitution.

39.155 Superpower Economics

4 Q.H.

Will analyze the relative economic structure and strength of the United States, the Soviet Union, Japan, and the Common Market and China, as well as the economic relations among these powers. Will also examine the impact of these relations on the domestic economies of the superpowers and of the developing nations of the world.

39.190, 39.191 Directed Study (each) 4 Q.H.

Independent work under the direction of a member of the Department on a chosen topic. Limited to qualified seniors majoring in Economics, with approval of Department.

39.241 Local Labor Market Analysis and Human Resource Planning

4 Q.H.

(Prereq. 39.115 and 39.116 or 39.105 and 39.275, 39.775 strongly recommended)

This course will help acquaint the student with a variety of methods and data sources for analyzing conditions in regional, state, and local labor markets to determine the extent, nature, and causes of human resource problems and to utilize that information in planning and designing appropriate employment and training strategies. Topics will include empirical analysis of state and local labor force developments, unemployment and poverty problems, the industrial and occupational composition of employment, wage structures, and trends in state and local income distributions, as well as methods for planning employment and training programs at the state and local levels.

39.242 Economics and Education and Training

(Prereq. 39.115 and 39.116 or 39.105 4 Q.H.

and 39.106, as well as 39.279 strongly recommended)

This course provides a theoretical and empirical treatment of a variety of economic issues related to education and job training programs, including formal education (secondary and post-secondary), vocational education, on-the-job training, and CETA-related employment and training programs. Emphasis will be placed upon the use of analytical techniques for determining the effectiveness of education and training investments from a private and social standpoint, including the design of follow-up studies, cost-effectiveness analysis, and benefit-cost analysis.

39.250 Statistics I

4 Q.H.

Elementary set theory, basic probability, Bayesian decision making, measurement and presentation of economic statistics, descriptive statistics, and basic estimation techniques.

39.251 Statistics II

4 Q.H.

(Prereq. 39.250)

Testing statistical hypotheses, sampling problems; analysis of variance; correlation and linear regression analysis; multivariate regression analysis.

39.253 Accounting Data for Social Scientists

(Prereq. 39.115 and 39.116 or 39.105 and 39.106 or instructor's approval) 4 Q.H.

This course is designed to familiarize non-accountants with the basic techniques and procedures of private and public accounting. Topics include developing and interpreting income statements and balance sheets, asset turnover, key accounting ratios, capital budgeting, cost flow analysis, and present value determinations. The course also compares and contrasts the treatment of macro and micro accounting data.

39.254 Managerial Economics

4 Q.H.

(Prereq. 39.116 or 39.106)

This course emphasizes the application of economic principles and theory, by the use of case studies, to the solution of problems of decision making in such areas as demand forecasting, price policies, estimation and control of costs, financing of capital investments, and responses to government taxation and regulation policies.

39.255 Microeconomic Theory

4 Q.H.

(Prereq. 39.106, 39.116 or equiv.)

A detailed study of supply-and-demand analysis, various elasticity concepts and applications, theory of consumer demand, theory of production, derivation of cost curves. Detailed analyses of pricing and output behavior in the several market structures with their welfare implications; the pricing of resources.

39.256 Macroeconomic Theory

4 Q.H.

(Prereq. 39.105, 39.115, or equiv.)

Investigation of the conceptual and empirical problems of creating and using national accounts; price index problems; conceptual and empirical evaluation of several consumption and investment functions, and their policy implications; multiplier and accelerator models; a brief history of recent cyclical fluctuations. Theories of inflation and growth are analyzed in the light of recent economic history.

39.259 European Economic Development

4 Q.H.

Economic inheritance of the nineteenth-century development of capitalism and *laissez-faire*. The aftermath of the Industrial Revolution, European overseas expansion, the twentieth century, the world wars, the dissolution of empires, American economic conquest and European integration, the future of less developed areas in southern Europe. Environmental impact of industrialism and the implications of technological society.

39.260 American Economic Development

4 Q.H.

Economic development of the United States from the colonial period to the present; historical changes in available factors; economic institutions and technologies; special attention to preconditions of industrialism. The American Industrial Revolution, its spread and socioeconomic consequences. The Great Depression and the subsequent rise of mixed economy and welfare state; U.S. adjustments to postwar economic changes.

39.261 Economic History of Less Developed Countries

4 Q.H.

The problems of initiating and sustaining growth in selected third-world countries during the last two-hundred years, with emphasis on traditional vs. contemporary economic development. Role of Western society; impact of technological and structural changes; relations between states and economic enterprises.

39.262 Government Expenditures: Structure and Evaluation

4 Q.H.

(Prereq. 39.106, 39.116, or equiv.)

Fiscal functions of government, fiscal institutions and politics, theory of social goods, public expenditure growth and structure, the federal budget expenditure evaluation and cost-benefit case studies, fiscal federalism in theory and practice.

39.263 Financing of Government: Taxation and Debt

4 Q.H.

(Prereq. 39.106, 39.116, or equiv.)

Principles of taxation, problems of tax structure and reform, major names at federal, state, and local levels, tax burden incidence, effects of taxation on economic efficiency and growth, negative income tax and social security finance, issues of public debt, public enterprise pricing, international tax coordination, taxation in developing countries.

39.265 Money and Banking

4 Q.H.

(Prereq. 39.105, 39.115, or equiv.)

The nature and function of money, credit, and monetary standards, and the role of our monetary and banking system in the economy. Topics include commercial banking, monetary theory and policy, the role and instruments of the Federal Reserve System, and international monetary problems.

39.267 Economics of Urban Transportation

4 Q.H.

Transportation and land-use patterns; externalities; social costs and social benefits of various modes of urban transportation; ownership, regulations, and financing of various modes of transportation; economies of new technology in urban transportation.

39.268 Urban Economics

4 Q.H.

An inquiry into the causes of the location and the growth of urban centers; economic analysis of selected urban problems.

39.269 Urban Economic Problems and Policies

4 Q.H.

Sequel to Urban Economics. Detailed analysis of urban problems, such as housing, transportation, land use, and public services. Exploration of public policies related to such problems.

39.271 Social Control of Economic Activities

4 Q.H.

Development of the government's role in economic activities, examining the relationship between the government and industry, labor, agriculture, public utilities, and consumers. The course will trace the changing role of the government from a *laissez-faire* policy to one of direct intervention in the economy. Current topics such as wage and price control, environment and antipollution policies, consumer protection, and conglomerate mergers will be discussed.

39.273 Industrial Organization and Public Policy (Prereq. 39.255) 4 Q.H.

The theoretical framework for analysis and evaluation of the static and dynamic performance of real markets. An examination of the empirical studies testing the usefulness of applying theory to real markets. An examination of antitrust as a public policy designed to promote better market performances.

39.275 Labor Economics 4 Q.H.

Examination of the economics of the labor market and the labor force and of the institutions and policies dealing with them; employment, unemployment, wage determination, income distribution, and the development and efficient use of labor resources; development of trade unions; collective bargaining issues and their economic consequences.

39.277 Economics of the Quality of Urban Environment and Control 4 Q.H.

Economic analysis of air, water, thermal, and noise pollution; the utilization of urban space and other urban resources; identification of possible economic effects of urban environment, such as crime, delinquency, immobility, and congestion.

39.278 Income Inequalities and Discrimination 4 Q.H.

Economic analysis of income inequalities and incidence of poverty. Examination of forces contributing to income inequality and poverty; economics of racial discrimination; public welfare system, and other income maintenance schemes.

39.279 Employment and Training Programs and Policies 4 Q.H.

Objectives of employment and training programs; efforts to improve the labor market position of impoverished groups; economic evaluation of employment and training programs; planning for local labor markets and future needs.

39.280 Comparative Economics 4 Q.H.

Competing types of theoretical economic systems; analysis of organization and operation of currently existing types of communist, socialist, and capitalist economies; comparison and evaluation of economic behavior and performance of different economic systems.

39.281 Introduction to Mathematical Economics 4 Q.H.

(Prereq. 39.115 or 39.105; 39.116 or 39.106; 10.105)

Functional analysis, matrix algebra, differential calculus and optimization—mathematics and elementary economic applications.

39.282 Mathematical Economics 4 Q.H.

(Prereq. 39.281 or consent of instructor)
For economics, mathematics, business, and engineering students interested in a broad coverage of economic analysis using

mathematical techniques as tools. Topics include models of the firm, demand theory, input-output, and other planning and policy models of the national economy.

39.283 Labor Market Position of Women and Sex Discrimination 4 Q.H.

Economic analysis of the labor market position of women in light of the changing structure of the economy of the United States, and of the institutional setting. Analysis of female labor participation, unemployment, wage differentials, occupational concentration and occupational segregation. Theories and evidence of sex discrimination. New opportunities open to women.

39.285 Development Economics 4 Q.H.

Prospects for economic growth and development in poor nations as indicated by economic analysis and historical experience: social, cultural, and institutional determinants of growth; analysis of agriculture and development, the role of technological change, population, and foreign trade.

39.286 International Economics 4 Q.H.

(Prereq. 39.106, 39.116 or equiv.)
Introduction to the theory of international trade and its role in resource allocation; implications of economic welfare; foreign exchange; the balance of payments mechanism; and problems of disequilibrium and adjustment.

39.288 Business Cycles and Inflation 4 Q.H.

(Prereq. 39.105 or 39.115 and 39.106 or 39.116)
Survey and analysis of the causes and processes of business cycles and inflations; limited to the post-World War I period, with special attention to the current situation; evaluation of policy measures.

39.289 Advanced Economic Theory 4 Q.H.

(Prereq. 39.255 and 39.256)
Advanced theoretical treatment of selected topics in micro- and macroeconomics. Recommended for students planning to take graduate economics.

39.291 Senior Economic Seminar 4 Q.H.

(Prereq. 39.255 and 39.256)
Course for senior Economics majors; coordinating and applying economic concepts, methodology, and data to contemporary issues and problems of broad social, economic, and philosophical importance.

39.292 History of Economic Thought 4 Q.H.

Comprehensive course of study in the development of economic thought. Coverage includes mercantilism as the first economic doctrine; analysis of older classical school, its later refinements (modern marginalism), and its important critics (socialists, Marxists); Keynesian and modern developments.

39.293 Introduction to Econometrics 4 Q.H.
(Prereq. 39.105 or 39.115; 39.106 or 39.116;
and 39.251)

The methods of econometric estimation and forecasting. Coverage includes topics in various statistical techniques. Students are given the opportunity to construct their own models and use computer facilities for estimation and forecasting.

39.294 Problems in Economic Research 4 Q.H.
(Prereq. 39.105 or 39.115; and 39.106 or 39.116;
and 39.251)

Research methods of practicing economists with typical problems from applied areas of economics and choice of modeling framework; problems of data collection, review of estimation techniques and interpretation of results; development of static and dynamic adaptive policy models.

Accounting

41.111 Accounting Principles I 4 Q.H.

This first of a series of accounting courses assumes students do not possess knowledge of the subject. Both this course and 41.112 are designed to help provide an understanding of accounting issues and objectives for proper interpretation and analysis of financial data. Specific topics covered in this first course are 1) the nature, function, and environment of accounting; 2) the basic accounting model; 3) financial and analytical ratios; 4) the accounting cycle; 5) accounting for merchandising entities; and 6) the control of cash and receivables.

41.112 Accounting Principles II 4 Q.H.
(Prereq. 41.111)

The second of a series of accounting courses. Students are introduced to financial and managerial accounting decisions through class discussions, short exercises, and demonstration problems. Specific topics covered include 1) control of inventory; 2) acquisition, depreciation, and disposal of plant and equipment; 3) paid-in capital related to sole proprietorships, partnerships, and corporations; 4) short- and long-term debt financing; 5) the analysis and interpretation of financial reporting; and 6) the statement of changes in financial position.

41.118 Principles of Accounting 8 Q.H.
This course covers the content of courses 41.111 and 41.112 and is primarily intended for transfer students.

41.205 Cost Accounting for Management 4 Q.H.
(Prereq. 41.112)

An examination of cost accounting from a managerial viewpoint. The impact of quantitative and behavioral aspects on budgets and cost control is stressed. This course is designed specifically for management majors.

39.295, 39.296, 39.297, 39.298 Junior-Senior Honors Program (each) 4 Q.H.
For prerequisites and other details, see the section on the Junior-Senior Honors Program on page 5.

41.210 Introduction to Accounting—A. & S.

4 Q.H.

Specifically for Arts and Sciences majors, this course is designed to help provide a fundamental knowledge of accounting to students who do not expect to become accountants but would like the opportunity to learn to understand, interpret, and make use of accounting data. The course surveys the foundations of accounting and the role it plays in the management of the profit and nonprofit sectors of the American economy.

41.251 Intermediate Accounting I 4 Q.H.
(Prereq. 41.112 or equiv.)

The principle foundation course for accountants begins with a comprehensive review of basic accounting principles, operations, and financial statements. Development of accounting theory is stressed in the analysis of alternative treatments and procedures. Specific areas receiving intensive treatment are cash, accounts receivable, inventories, and current liabilities.

41.252 Intermediate Accounting II 4 Q.H.
(Prereq. 41.251)

This course is a continuation of the study of accounting theory and various accounting procedures. Specific topics receiving intensive coverage are long-term assets, depreciation, leases, and pensions.

41.253 Cost Accounting I 4 Q.H.
(Prereq. 41.112)

This course examines cost determination and use. Special consideration is given to manufacturing concerns. Specific coverage includes cost behavior, relevant costs, performance evaluation, budgets and standard costs.

41.254 Cost Accounting II 4 Q.H.

(Prereq. 41.253)

This course is a continuation of 41.253 (Cost Accounting I) and gives special attention to the use of cost data in decision making, budget planning, and the control process.

41.255 Intermediate Accounting III 4 Q.H.
(Prereq. 41.252)

This course completes the study of basic accounting theory and covers special areas of concern to modern accounting practice. Stockholders' equity, computation of earnings per share, accounting changes and error detection, income tax accounting, changes in financial condition, price-level and current-value accounting are studied.

41.257 Auditing 4 Q.H.

(Prereq. 1978-79 - 41.252; 1979-80 and subsequent—41.255)

Designed for the student who plans to enter the public accounting profession. Examines audit concepts, standards and procedures including the auditor's legal and ethical responsibilities. Emphasis is on concepts rather than procedures. Specific areas covered are auditing standards, auditor's reports, internal control, statistical sampling, EDP, and legal liability.

41.260 Federal Income Taxes I 4 Q.H.

(Prereq. 41.255 or permission of instructor)

This course stresses basic understanding of the federal income tax structure relating to individuals rather than to corporations. Students are required to complete several research cases directed at solving various tax problems. Case studies introduce the student to the current Internal Revenue Code, income tax regulations, and cumulative bulletins. Tax court cases and various private company publications are discussed.

41.262 Accounting Theory and Practice 4 Q.H.

(Prereq. 1978-79, 41.252; 1979-80 and subsequent—41.255)

Objectives are to examine 1) the theory and practice of corporate financial reporting and some of the controversial areas in accounting; 2) the pronouncements and research studies of the authoritative institutions of the profession relating to the practice of accounting; 3) the textual and periodical literature on accounting theory.

41.263 Accounting Planning and Control 4 Q.H.
(Prereq. 41.254)

An examination of the role of management planning and control systems and problems inherent in their design and use. Defines the process of identifying factors in the design of these systems.

41.264 Advanced Accounting Problems 4 Q.H.

(Prereq. 1978-79—41.252; 1979-80 and subsequent—41.255)

An in-depth analysis of various accounting topics for the serious accounting student planning a career as a professional accountant. Topics covered are installment sales and consignments, partnership accounting, corporate liquidation and reorganization, estates and trusts, government accounting, and international accounting problems.

41.265 Management Accounting 4 Q.H.
(Prereq. 41.263)

This course examines the role of the management accountant. Topics covered include relationships between financial and managerial accounting, design and use of accounting and control systems, measurement techniques and uses, the role of behavior in accounting, performance evaluation, and other topics of current interest.

41.266 Contemporary Accounting Problems

(Prereq. 1978-79—41.252; 1979-80 and subsequent—41.255) 4 Q.H.

A seminar designed to survey some of the important problem areas currently facing the accounting profession. These areas will incorporate asset valuation, price-level adjusted statements, environmental considerations, income measurement, and governmental intervention.

41.269 Advanced Accounting Problems II

(Prereq. 41.255 or permission of instructor) 4 Q.H.

This course is a comprehensive analysis of the accounting theory and practice associate with corporate acquisitions and combinations. Topics covered include methods of consolidation, elimination of profits on intercompany transactions, purchase versus pooling of interests, and accounting for goodwill. The course is intended for the serious student preparing for a career as a professional accountant.

41.272 Internal Auditing 4 Q.H.

(Prereq. Midlevel standing)

This course is designed to aid students in understanding how the internal auditor undertakes a review and appraisal of operations. Study will focus on the internal audit environment, preparation of long-range programs, the performance of preliminary surveys, flowcharting, the development of audit programs, sampling, audit techniques, and reporting. The course is case-study oriented.

41.273 Federal Income Taxes II 4 Q.H.
(Prereq. 41.260)

This course is a continuation of 41.260 (Federal Income Tax I), focusing on taxpayers other than individuals and the treatment of those property transfers subject to federal, gift, estate and trust taxes. Tax research is an important element of this course. A major emphasis is given to tax planning considerations, especially to gift and death tax consequences.

41.274 Accounting Systems

4 Q.H.

This course examines the process of designing both financial and managerial accounting systems. The approach is conceptual, and the course considers the use of computer technology in designing new systems where computers are appropriate. The course assumes an understanding of accounting processes in both financial and managerial areas.

Marketing

43.120 Introduction to Marketing

4 Q.H.

This course consists of lectures, readings, and small group discussions on the role of marketing in contemporary society, in the business enterprise, and in the nonprofit organization. Consideration is given to the planning, operation, and evaluation of marketing and promotional efforts necessary to the effective marketing of consumer and industrial products and services in both profit and nonprofit organizations.

43.122 Workshop in Negotiations

4 Q.H.

(Prereq. Junior or senior standing)

The objective of this course is to aid students in improving their understanding of the negotiations process and their ability to plan and conduct negotiations effectively. Class activities involve readings, lectures and discussions, as well as numerous case discussions and live and videotaped role-play negotiation exercises.

43.235 Marketing Channels

4 Q.H.

(Prereq. 43.120 or consent of instructor and junior or senior standing)

This course studies marketing structures and institutions: their evolution, functions, interrelationships, and the management of their role in the marketing process.

43.236 Retail Merchandising and Control

(Prereq. 43.120 or consent of instructor) 4 Q.H.

This course examines the concepts and techniques of store operations and merchandise management. It considers such topics as markup/markdown planning and analysis, pricing, inventory control, stock turn, open-to-buy, profitability analysis, and expense control.

43.237 Retail Strategies and Problems

(Prereq. 43.120 or consent of instructor) 4 Q.H.

This course analyzes the strategies and policy decisions of the major retailing institutions: department stores, supermarkets, discount chain and specialty stores. The evolution of the retail enterprises as well as the characteristics and prospects for new store types are also examined.

43.240 Marketing Research

4 Q.H.

(Prereq. 43.252)

Focuses on the survey research process and the analysis of data using "canned" computer pro-

gramming routines. Among the topics covered are 1) problem definition; 2) research design; 3) sampling techniques; 4) questionnaire development; 5) data collection methods; and 6) data analysis. Students are expected to work on group projects with participating firms. No previous computer experience required.

43.242 Sales Management

4 Q.H.

(Prereq. 43.252)

This course is designed to help the student develop critical, decision-making skills necessary for both building and maintaining an effective sales organization. Cases and readings are used to examine the strategic and operating problems of the sales manager. Major topic areas include (1) the selling function; (2) sales management at the field level; (3) the sales executive; and (4) sales and marketing management.

43.244 Quantitative Methods in Marketing

4 Q.H.

(Prereq. 49.251)

Focuses on statistical methods and techniques commonly used in the analysis and interpretation of survey and experimental data. "Canned" computer programs will be used extensively to illustrate the applicability of the methods discussed. No previous computer experience required.

43.252 Marketing Management

4 Q.H.

(Prereq. 43.120)

This course is designed to provide training in marketing decision making. Case studies, simulating actual business settings, are used to help students develop analytical abilities and sharpen their communications skills. Topics covered range from techniques used to analyze a market to the development of a total marketing strategy (product policy, pricing policy, promotion policy, and distribution policy).

43.261 International Marketing

4 Q.H.

(Prereq. 43.120)

Designed to help familiarize the student with those aspects of marketing which are unique to international business within the framework of traditional functional areas of marketing. The focus is on the environment and the modifications of marketing concepts and practices necessitated by environmental differences. Topics include cultural dynamics in international markets, political and legal environmental constraints, educational and economic constraints, international marketing research, international marketing institutions, and marketing practices abroad.

43.262 Advertising Management

4 Q.H.

(Prereq. 43.252 or junior or senior status)

This course will focus on advertising management through class discussions of case studies selected to illustrate methods of achieving proper balance and coordination of advertising with other elements in the marketing mix.

43.265 Industrial Marketing 4 Q.H.
(Prereq. 43.252)

The marketing of products where business firms are the potential customers. Upper-class elective, open to juniors and seniors.

43.266 Marketing in the Service Sector 4 Q.H.
(Prereq. 43.120)

A basic treatment of methods and techniques for marketing in the service sector, which includes sports, recreation, public service, banking, insurance, and hotels. In addition to the principles covered, a number of descriptive studies will be analyzed covering the application of such marketing principles in key service areas.

43.271 New Product Development 4 Q.H.
(Prereq. 45.112)

For most firms, coping with the problems of environmental change through modification of the product line is both vital and difficult. This seminar is primarily concerned with the examination and analysis of the problems firms face in directing and managing their new product development activities.

43.275 Foundations of Consumer Behavior 4 Q.H.
(Prereq. 43.252)

Concerned with helping students develop an understanding of consumer attitudes and behavior processes as the basis of the design of marketing problems. Consideration is given to economic and behavioral models of consumer behavior and to underlying behavioral theories and concepts.

43.278 Competitive Strategy 4 Q.H.
(Prereq. 43.252)

A capstone marketing course, required of all students with a marketing concentration. The focus is on the formulation of marketing strategy at a policy level and its implementation in a dynamic environment.

Finance and Insurance

44.120 Introduction to Finance 4 Q.H.

Introduction to the important tools and concepts of finance. Includes the analysis of historical financial statements and development of pro forma financial statements, and the management of assets. Helps acquaint students with various sources of supply of the different types of funds available to a firm.

44.122 Taxes and Financial Decisions 4 Q.H.
(Prereq. Middler standing)

In this course, the case method is used to discuss a number of financial decisions which are greatly influenced by tax considerations, the most important of which are concerned with capital structure, dividend policy, acquisition terms, investment policies, and liquidations. The federal income tax receives primary consideration, but state and foreign taxes are also discussed.

44.144 Management of Financial Institutions 4 Q.H.
(Prereq. 44.120)

Considers the broad range of decision-making problems faced by major financial institutions, such as commercial banks, savings and investment institutions, and finance companies when viewed as competitive, profit-seeking business entities. The course considers such topical areas as the nature and scope of the capital markets confronting these institutions, specialized problems with regard to the sources and uses of funds of the financial institutions, and strategic policy planning of financial institutions.

44.145 Securities Markets 4 Q.H.
(Prereq. 44.120)

Striking a balance between description and analysis, the course provides a detailed examination of the operation and function of investment bankers, broker-dealers, and securities exchanges. There is a thorough explanation of the mechanics of cash and margin accounts, trading options, and regulations affecting securities markets.

44.148 Seminar in Financial Futures 4 Q.H.
(Prereq. 44.120 and 44.275)

The term "financial futures" concerns futures contracts in various capital and money market instruments, foreign currencies, gold, silver, etc. All of these contracts offer opportunities to protect investments against fluctuations in the value of the dollar as well as speculative opportunities. The purpose of this seminar is to explain the basic mechanics of this market and the characteristics of these commodities. Students will be required to do individual research in various aspects of the use of these instruments and the advantages, disadvantages and opportunities in this field. Some knowledge of money and capital markets is necessary for those taking the course.

44.159 Small Business Finance 4 Q.H.
(Prereq. 44.120)

Investigates the financial requirements of smaller businesses and the sources of funds open to them. Methods of financial control in the

small business are covered, as well as requirements of financing institutions. The problem of obtaining adequate equity financing and equity sources is highlighted.

44.160 International Financial Management

(Prereq. 44.120) 4 Q.H.

Considers the financial policies and practices of companies involved in multinational operations. Specific topics covered include 1) capital budgeting; 2) capitalization policies; 3) the use of Eurocurrency and Eurobond markets; and 4) foreign exchange risk management by the international firm.

44.162 A Risk Management Approach to Property and Casualty Insurance

4 Q.H.

(Prereq. 44.120)

The concepts of risk, uncertainty, risk management, and insurance are introduced. A comprehensive analysis of property and casualty insurance markets and products is presented from a buyer's perspective. Principal emphasis is placed on defining and analyzing alternative methods of treating risk in a business enterprise. The course discusses different risk management strategies and analyzes practical situations.

44.181 Investment Management

4 Q.H.

(Prereq. 44.120 and 49.251)

Provides the student with the opportunity to acquire a broad overview of the concepts, practices, and procedures of investment management. Areas to be covered include basic security types, security market operations, security analysis—both fundamental and technical—and an introduction to portfolio management.

44.185 Management of Long-Term Financial Resources

4 Q.H.

(Prereq. 44.120 and 44.154)

Focuses on several phases of long-term finance. Particular attention will be devoted to complex cases dealing with capital budgeting, new financing, and mechanisms (both public and private) used to raise long-term funds.

Management

45.106 International Labor Relations Systems

(Prereq. 45.210) 4 Q.H.

Analyzes the labor relations systems of selected countries in comparison to that of the United States. The political, cultural, and economic forces that shaped these systems will also be studied. Special attention will be given to such international institutions as multinational companies and the ILO. There will be cases, readings, and projects assigned.

45.112 Business Policy

4 Q.H.

(Prereq. 45.210)

Corporate strategy and its elements, including

44.240 Personal Finance

4 Q.H.

(Not open to College of Business Administration students)

The management of one's total personal estate: budgeting, savings, insurance, investments, borrowing, taxes, Social Security, pensions, annuities, securities markets, mutual funds, and their integration.

44.241 Personal Financial Management

4 Q.H.

(Prereq. 44.120)

Developing personal financial management expertise based on an integrated plan in which alternative courses of action are judged by their value to the decision maker's particular set of economic objectives. The overall personal economic plan is the consistent focus of the course and unites such diverse topics as inflation and investment selection, insurance, short- and long-run hedges against the purchasing-power risk, purchasing assets, etc. The course is decision oriented.

44.275 Money and Business Activity

4 Q.H.

(Prereq. Middler standing)

Provides students the opportunity to acquire an understanding of the financial environment faced by a firm. Discusses the forces which determine the changes in money and capital markets. Explores the implications of changing financial environment for the management of funds in a firm.

an analysis of the company, its resources, opportunities, environment, and decision makers. Emphasis on decision making and implementation of strategy while operating a company in the context of a business simulation.

45.130 Opportunity Analysis and Venture Capital

(Prereq. 45.212 or consent of instructor) 4 Q.H.

Concerned with the essential tasks performed prior to establishing a new venture. These include finding a suitable business opportunity or developing an idea for a product or service; analyzing the feasibility of the opportunity; developing a business plan; structuring the ven-

ture team; seeking sources of seed capital; and forming a venture action plan for beginning operations.

45.160 Operations Planning and Control 4 Q.H.
(Prereq. 45.265)

The planning and control necessary for an enterprise to respond to customer demand. Specific topics include the design of the planning and control system, inventory planning and control, forecasting for operations planning, and operations scheduling.

45.163 Purchasing and Materials Management 4 Q.H.

Concerned with decisions related to the flow of materials from supplier to point of use. Special emphasis on problems related to purchasing, including negotiation, value analysis, supplier selection, etc. While greater emphasis is placed on materials management in manufacturing organizations, nonprofit and nonmanufacturing concerns are also included. Instructor applies latest research in field gleaned from projects sponsored by the National Association of Purchasing Management and the American Production and Inventory Control Society.

45.209 Organization Behavior I 4 Q.H.

Application of concepts from the behavioral sciences to an understanding of the behavior of people in organizational settings. Focus is on systematic approaches to understanding behavior, looking at people as individuals and as members of small groups, and determining implications for management. Emphasis on helping students to develop skill in applying behavioral concepts to situational problems.

45.210 Organizational Behavior II 4 Q.H.
(Prereq. 45.209)

A continuation of the study of behavior in organizations. Initial focus is on leadership behavior; later analysis examines the behavior of people in larger groups and in the total organization. As a complex system, the total organization provides a backdrop for viewing the process of change. Emphasis is on assisting students in developing human and conceptual skills in planning and implementing organizational change.

45.212 New Venture Creation: A Career Choice 4 Q.H.

Designed to assist students interested in small business in answering a number of important questions through a systematic analysis of their own potentials for entrepreneurial careers, i.e., What is involved in starting my own business? What is my own entrepreneurial orientation and commitment? What managerial and behavioral skills do I need for achievement? How can I plan for my personal and entrepreneurial goals? Case discussions, self-assessment and goal-setting exercises, guest speakers, and a student-selected project are used.

45.215 Organization Structure and Process 4 Q.H.
(Prereq. 45.210)

An examination of various schools of management, including the classical, scientific, human relations, and contingency approaches to management. This course also explores organizational concepts developed from research on organizations including interdependence, uncertainty, coordination, and differentiation-integration. Readings and research findings will be applied to case examples of complex organizations.

45.216 Managerial Skills Seminar 4 Q.H.
(Prereq. 45.210)

A study of the nature of managerial work focusing on three key managerial roles—interpersonal, informational, and decisional. Behavioral determinants of administrative effectiveness are examined with an emphasis on the practical implications of and personal orientations to those key managerial roles.

45.218 Motivation and Control 4 Q.H.
(Prereq. 45.210)

An extensive analysis of various theories of motivation, including Herzberg's two-factor theory, expectancy theory, learning theory, need theory (McClelland), and competence motivation. This course also considers the behavioral implications of various systems of measuring and controlling operations. Budgetary control systems, compensation systems, performance appraisal, and management-by-objectives programs will be examined in a number of complex organizations.

45.250 Business and Society 4 Q.H.
(Prereq. 45.210)

An analysis of developing external influences on the business organization—social, legal, economic, cultural, ethical, and technical. Examination of the corporation in its interactions with these forces. Focus on reconciling the strains generated by these societal factors and their impact on the management and decision-making process.

45.263 Career Exploration and Self-Assessment 4 Q.H.
(Prereq. 45.209)

This course examines the tools for both self-assessment (investigating one's skills, abilities, needs, values, and interests) and career exploration (determining the nature of and requirements for entering and succeeding in various career fields). The goal of the course is to help students develop an individualized plan of action which summarizes a wide variety of data indicating an individual's present status and career goals, and the means by which to bridge the gap.

45.265 Operations Management

4 Q.H.

(Prereq. 49.251)

Operations management is concerned with planning and controlling the operations system of the firm, and includes the use of materials, workers, facilities, technology, and information to accomplish the objectives of the system. The course provides students an opportunity to acquire a basic understanding of the management of operations systems—their design, control, functions, evolution, and modification in order to facilitate managerial decision-making in manufacturing-related areas. Involves extensive use of case analysis and includes the design of product and process, capacity determination, work measurement, wage administration, human factors and behavioral considerations, worker-machine interaction, production planning and control, inventory management, and quality control.

45.267 Strategies of Organizational Changes

4 Q.H.

(Prereq. 45.210)

This course focuses on three basic areas: (1) organizations as stable systems that naturally resist both planned and unplanned change; (2) organizations as dynamic systems that continuously respond to both internal and external pressures for change; and (3) strategies and techniques for designing, implementing, and managing change. The role of the change agent will be discussed in this context.

45.268 Assessment of Prospective Employees

4 Q.H.

(Prereq. 45.210)

A variety of technical methods is presented which can significantly improve the effectiveness of personnel assessment over the typical methods presently in use. Personnel tools such as testing, interviewing, references, and biographical information will be examined critically. Basic issues and procedures such as equal employment opportunity, decision strategies, and the utility and evaluation of selection systems will be covered in detail.

45.269 Interpersonal Relations Through Transactional Analysis

4 Q.H.

(Prereq. 45.210)

Using a simplified behavioral vocabulary, Transactional Analysis becomes a language and way of thinking about the nature of interpersonal relations. As an applied skill, transactional analysis may help teach one how to improve communications and relationships between individuals. Transactional analysis has been used as a training technique by dozens of companies in such areas as improving the interpersonal skills of customer-contact personnel, implementing affirmative action programs, and improving superior-subordinate relations.

45.272 People and Productivity: Human Resources Management

4 Q.H.

(Prereq. 45.209)

Designed to help students develop understanding of contemporary issues in human resource management. Problems posed by changing work patterns, labor-force characteristics, union activities, and governmental policies are examined. Organizational experiments such as worker participation, job enlargement, and group incentives are discussed and evaluated.

45.273 Personnel Administration

4 Q.H.

(Prereq. 45.210)

Explores basic traditional personnel functions, with an emphasis on the role of the personnel specialist. Functions include recruitment, selection, placement, training and development of employees, as well as reward systems such as money and promotions. The recent challenge of new regulatory systems, such as affirmative action and occupational safety and health, on employment planning will be covered.

45.274 Contemporary Labor Issues

4 Q.H.

(Prereq. 45.210)

A study of current issues dealing with labor in its broadest sense. Deals with labor unions and manpower institutions and also the emerging development and training problems motivated by unemployment, poverty, and changing work patterns. Reviews recent legislation on equal employment opportunities and extension of bargaining rights for minorities, women, the handicapped, the aged, and migrant workers.

45.275 Labor Law

4 Q.H.

The purpose of this course is to help acquaint the student with the many constitutional and legal problems involved in labor organizing, industrial relations, labor negotiations, labor contract enforcement, and dispute resolution. Cases are studied for the legal principles underlying the common law, state and federal laws, and the constitutional questions of power and authority. The Sherman Act, Clayton Act, Norris-LaGuardia Act, and Labor Management Relations Act are considered.

45.276 Seminar in Collective Bargaining

4 Q.H.

(Prereq. 45.210)

The organization, negotiation, and administration of collective-bargaining relationships between management and unions in different industries, services, and levels of government. Simulations of actual bargaining and comparative research projects are part of the course.

45.277 Reward Systems: Wage, Salary and Benefits Administration

4 Q.H.

(Prereq. 45.210 or permission of instructor)

Study of compensation policy as part of the organization's overall reward system, with comparisons of differing needs and implementations. A survey of various direct and indirect

compensation systems provides the framework for the study of compensation policy.

45.278 Leadership 4 Q.H.
(Formerly 45.258, **Dynamics and Practice of Superior—Subordinate Relations**)
(Prereq. 45.210)

A study of the leadership function in a variety of organizational settings. Using a contingency approach, this course explores a range of possible leadership behaviors, relating the appropriateness of a particular style to a number of situational factors. Readings provide an opportunity to explore several contingency theories of leadership; cases allow for the application of these models; and video-taped role playing and self-assessment techniques permit the student to evaluate his/her own leadership style.

45.295 Small Business Institute Project 8 Q.H.
(Prereq. Senior status and one entrepreneurship course or permission of instructor)
The Small Business Institute Field Project has

been launched with the cooperation of the Small Business Administration (SBA) and some of its client companies in greater Boston. A student team is expected to interact with a smaller company, helping management to analyze opportunities and problems facing the business, and to develop practical recommendations for the company's decision makers. Students are expected to allocate approximately one day per week to the project, including on-site work with the company owner-managers with whom they have been paired and to participate in related research, report preparation, and presentation of results. This real-world experience is blended with occasional class meetings and frequent team meetings with a faculty member to discuss the field work and to explore alternatives. Interim progress reports and a final report are presented to the client company, SBA, and the class.

International Business Administration

46.100 Introduction to International Business 4 Q.H.

Focuses on the cultural, economic, and political aspects of domestic and foreign environments and their effect on the international operations of business firms. Topics covered include 1) the principles, patterns, and potential of international trade and investments; 2) the development of management strategies for international businesses; and 3) the organization and management of the firm's international operations.

46.101 Seminar in International Business 4 Q.H.
(Prereq. 46.100)

Applies the concepts and skills acquired in other international and domestic courses to the solution of managerial problems. It focuses on the task of solving significant managerial problems in international and foreign cultural contexts. Student reports form a major part of this course and are expected to concentrate on either a functional business area related to international operations or on analyses of market opportunities and methods of entry in a foreign environment. Other instructional vehicles include case analyses and discussions of current issues.

46.102 Comparative International Management 4 Q.H.

The objective of this course is to help to develop the student's conceptual and analytical abilities to 1) identify and analyze management systems in various national settings and 2) understand the impact of economic, social, political, and cultural variables on management systems.

46.103 Environmental Pressures and the Multinational Corporation 4 Q.H.
(Prereq. 45.209 and 45.210)

Rapid multidimensional change in the world environment creates substantial pressures on corporations—especially large multinationals. The purposes of this course are to identify and evaluate 1) environmental pressures most likely to have impact in the coming decade(s); 2) planning approaches which may be useful to the manager in analyzing the changing world environment; and 3) possible corporate responses to any environmental pressures. This course is designed for both students in international business and those who have a general interest in the changing environment.

Transportation

48.101 Principles of Transportation 4 Q.H. (Prereq. 39.105)

The political, social, and economic functions of transportation; development and structure of the domestic transportation system; the nature of government regulation and promotion of the several modes.

48.102 Current Issues in Transportation Policy 4 Q.H. (Prereq. 48.101)

An overview of the regulatory process and its impact on the domestic transportation system. Critical examination of topical policy issues which confront carriers, shippers, and the agencies of regulation.

48.103 Carrier Management 4 Q.H. (Prereq. 48.101)

The transportation system from the carrier's viewpoint; managerial response to a heavily regulated and rapidly expanding environment; focus on carrier decision-making involving routes, scheduling, financing, and pricing of services.

48.104 Physical Distribution Management 4 Q.H. (Prereq. Middler standing)

Movement, distribution, and control of raw material and finished goods flows. Examination of the importance of inventory control, scheduling, warehousing, and transportation in the design and operation of distribution systems.

48.105 Urban Transportation 4 Q.H.

The movement of people and freight in and around metropolitan areas. A management approach to the planning, implementation, and operation of mass transit systems. Interrelationships of transit with other urban programs, the auto mode, and the government/public sector will be discussed.

48.106 Air Transportation 4 Q.H. (Prereq. 48.101)

A managerial perspective on economics and regulation of aviation. The course probes aspects of commercial aviation, passenger and cargo transportation, and key areas of general aviation.

48.108 Transportation Labor 4 Q.H. (Prereq. 48.101)

This course focuses on the significance of the labor component in the transportation industries. Attention is devoted to trends in employee compensation, productivity, and bargaining patterns. Also examined are the role of government in this area and the impact of transportation labor on shippers, carriers, and consumers.

48.110 International Transportation and Distribution Management 4 Q.H.

This course examines the present and future status of United States and world ocean and air transportation in international trade and development. The economic, regulatory, financial and operating characteristics of these forms of carriage are examined with primary emphasis given to their impact on international trade patterns. Other topics include government promotion, subsidy, and technological innovation.

48.120 Seminar in Transportation and Distribution 4 Q.H.

(Prereq. 48.102 and 48.104)

A discussion- and research-oriented course which focuses on a limited number of advanced transportation and distribution topics. Interaction with business and government through individual research on the topic chosen for presentation by the student.

Also see course 49.262 for Independent Study.

General Business

49.100 Introduction to Business 4 Q.H.

The business organization as a system of interrelated functions and operations, the interactions between the organization and its environment, and the role of management in business organizations.

49.107 Management of Smaller Enterprises 4 Q.H.

A general management course that focuses upon the strategies and operating problems of smaller, already established business enterprises. The course is designed for individuals who are considering entrepreneurial careers or careers in management, finance, or marketing within the smaller company environment. Discussion will explore the characteristics and urgencies of problems that smaller companies

are likely to encounter at different stages in their evolving life cycle, from the postnatal period to the more mature stage.

49.155 Legal Aspects of Business 4 Q.H.

This course examines the legal aspects of business transactions and business relationships involving contracts; sales, bulk transfers and secured transactions under the Uniform Commercial Code; principal and agency; and suretyship and guaranty.

49.205 Introduction to Data Processing 4 Q.H.

The students will be exposed to a history of electronic data processing, hardware and software, and an overview of the creation and operation of management information systems. During the first half of the course, the student will have the opportunity to learn to program the North-

eastern computer using the FORTRAN language.

49.210 The Law of Business Organizations and Commercial Paper 4 Q.H.
(Prereq. 49.155)

Introduction to the legal aspects of the typical forms of business organizations, partnerships, and corporations. The course also covers the commercial paper under the Uniform Commercial Code and the bankruptcy law.

49.212 Law of Wills, Trusts and Estates 4 Q.H.
Requirements of a valid will, claims of and against estates; the administration of estates, both formal and informal; essential elements for the creation of a trust; kinds of trusts, including inter vivos and testamentary trusts; the responsibilities and liabilities of trusts; and the rights of beneficiaries.

49.214 Decision Analysis 4 Q.H.
(Prereq. 49.251)

Focuses on the analysis of decision making with particular emphasis on realistic problems under uncertainty. The course aims at helping to improve the student's ability to make better decisions through a careful consideration of alternative courses of action and their consequences, relevant objectives, and the element of risk. Topics include the basic components of decision problems, the concepts of risk and utility, decision trees, and value of information.

49.215 Bulk Sales and Bankruptcy 4 Q.H.
In examining bulk transfers, a detailed study is made of the Uniform Commercial Code, Article 6: the need of the transferor to give to the transferee a sworn list of all his creditors; the giving of notice to the listed creditors; the contents of the notice, what creditors are protected; and the legal consequences of failure to comply with the Code. The bankruptcy aspect of this course deals with both voluntary and involuntary bankruptcies; the acts of bankruptcy; the appointment and duties of the trustee; provable and dischargeable debts; priority of debts; discharge and acts which bar a discharge.

49.240 Law in Society 4 Q.H.
Designed to provide students the opportunity to acquire a broad view of their legal rights and responsibilities in their relationships with the state and/or other people. Study includes torts such as assault and battery, trespass, negligence, slander, libel, and deceit, and crimes such as homicide, assault and battery, robbery, arson, larceny, and burglary.

49.249 Introduction: Quantitative Methods in Business 4 Q.H.
(Prereq. 10.119)

A model is a simplified representation or abstraction of reality. The focus of this course is on the representation of systems or managerial problems in the form of mathematical models

and their application to problem solving in business. Criteria for selecting an appropriate model description are discussed and specific techniques for development examined, including linear programming, differential calculus, and the use of descriptive statistics.

49.250 Business Statistics I 4 Q.H.
(Prereq. 49.249)

Statistics is a methodology concerned with data collection, analysis and interpretation. Information generated by statistical methods is used for analyzing decisions in the face of uncertainty. This course introduces fundamental concepts and methodology, including probability, probability distribution, Bayesian revisions, estimation, and hypothesis testing.

49.251 Business Statistics II 4 Q.H.
(Prereq. 49.250)

Continuation of 49.250, including chi-square tests, simple regression, correlation analysis, and elementary concepts of decision theory.

49.262 Independent Study 4 Q.H.
For a student who has received approval of a proposal to undertake independent study in lieu of any course required in the various concentrations. Each teaching area considers proposals presented by students to its Independent Studies Committee for evaluation and approval. Every proposal requires a detailed outline of the objectives and plan of study and must be accompanied by a supporting statement from the supervising faculty member under whose direction the study will take place. A copy of the final report prepared by the student will be presented to the appropriate Independent Studies Committee. Further information about the Independent Studies Program can be obtained from area coordinators.

49.263 Independent Study 4 Q.H.
Same as 49.262.

49.264 Independent Study 4 Q.H.
Same as 49.262.

49.265 Independent Study 4 Q.H.
Same as 49.262.

Education—Foundations

50.114 Education and Social Science 4 Q.H.

An interdisciplinary course, drawing on anthropology, psychology, and sociology, that exposes students to some of the concepts, methods, and terminology of these fields. Main themes are the evolution of human nature, the influence of previous experience and learning on the behavior of individuals and groups, difficulties in achieving a full degree of humanity in technological society, and the potentially powerful roles that "professional socializers" (teachers, clinicians, group leaders, etc.) can play in the lives of students and clients. Required for freshmen in Education and Boston-Bouve (except Physical Therapy); open to other students as an elective; prerequisite for subsequent courses in Social Foundations (50.161-50.168).

50.121 Human Development and Learning I

4 Q.H.

Developmental processes from prenatal life up to adolescence. Theories of learning and personality with research and case material covering major aspects of psychological development.

50.131 Human Development and Learning II

4 Q.H.

Basic overview of the continuity of human development in contemporary society, from the pre-adolescent period through adolescence, adulthood, middle age, and old age. Significant areas of growth, development, and adjustment for each period are considered, including social, sexual, personality, motivational, and cognitive aspects. 50.121 is *not* prerequisite for this course.

50.132 Creative Expression in Children 4 Q.H.

(Prereq. 50.121)

Designed to assist students who are interested in working with children in a variety of settings. Discussion will focus on the potentials of creative expression in interpersonal communication; the relationship of children's creative experiences to their cognitive, emotional, and social development; and related topics that will provide students the opportunity to acquire experience and confidence in working with various media available for creative expression.

50.133 Educational Applications of Social Psychology

4 Q.H.

(Prereq. 50.121 or 50.131)

Focus on theory and research in social psychology especially relevant to education. Areas covered are prejudice in the classroom; the school as a setting for manifestation of authoritarian personality; attitude organization and change in an educational environment; the class and the clique as "small groups"; the ex-

pression of need for achievement in various school structures; and related topics.

50.134 Mental Health in Teaching

4 Q.H.

(Prereq. 50.121 or 50.131)

Factors involved in the choice of teaching as a career, and psychological and occupational factors which contribute to teacher happiness, dissatisfaction, adjustment, and maladjustment. Examination of these factors is a background against which to consider 1) what teachers can do to foster healthy personalities; 2) how to deal with psychological forces in the classroom; and 3) steps to strengthen the emotional development of the normal child.

50.135 Cross-Cultural Studies of Child Rearing and Education

4 Q.H.

(Prereq. 50.121 or 50.131)

Child rearing and child life in contrasting cultures around the world. Emphasis on cognitive, emotional, and behavioral outcomes of concern to American educators, human services workers, and parents. Consideration given to alternative patterns of child rearing possibly useful in modern society. Readings focus primarily on ethnographic descriptions of particular cultures and psychological comparisons of children from contrasting backgrounds.

50.136 Language and Cognition: Educational Implications

4 Q.H.

(Prereq. 50.121 or 50.131)

Development of language and thought in the child: concept learning, problem solving, and language acquisition. Particular consideration given to the implications of current research and theory in these areas for educational practice.

50.137 Seminar in Adolescent Psychology

4 Q.H.

(Prereq. 50.131)

In-depth examination of motivational, intellectual, social, and emotional development of adolescents, from end of pre-adolescence to beginning of young adulthood. Special attention to current issues such as drug use, sexual behavior, and vocational choice. Each student is expected to examine a topic of choice in some depth.

50.138 Seminar in Human Learning and Motivation

4 Q.H.

(Prereq. 50.121 or 50.131)

Survey and analysis of the literature on human learning and motivation. Emphasis on interaction between human learning and motivation in the developmental process and the classroom.

50.139 Seminar in Early Childhood Development

4 Q.H.

(Prereq. 50.121)

The theory and research regarding the cognitive, personality, and social development of children from birth to six years, with respect to their implications for early childhood education. Various existing programs examined and new directions

50.141 Measurement and Evaluation 4 Q.H.
(Prereq. 51.135)

The fundamentals of measurement: the use of basic statistical concepts and techniques; evaluation of standardized and teacher-made tests.

50.142 Introduction to Educational Statistics

4 Q.H.

Emphasizes descriptive statistics useful in the evaluation of educational and related professional activities. Topics ordinarily covered include statistical notation, variability, probability, sampling techniques, linear regression, correlation, t-tests, and Chi-square tests of significance. Examples of applications of these techniques will be drawn, so far as possible, from the fields for which students in the course are preparing, as this may vary from quarter to quarter.

50.152 Comparative Education 4 Q.H.

A comparison of the national school systems of selected foreign countries with the school system in the United States. Course content will include comparative data in the fields of teaching, speech and hearing, special education, and human services.

50.153 Philosophy of Education 4 Q.H.

Objective is to help participants examine their own purposes in relation to those of the school as an institution. Course reading material will consist primarily of philosophical writings on topics such as the ethics of educational intervention, the delineation of educational concepts, the educational messages of long-range speculations and utopias, and normative assumptions underlying educational policies.

50.154 Current Issues in American Education

4 Q.H.

An analysis of the variety of current issues confronting teachers, speech and hearing clinicians, special education practitioners, and human services specialists. Attempts will be made to place these issues in a historical context.

50.161 Seminar in Group Process 4 Q.H.

A study of the structure, dynamics, and function of face-to-face groups leading to learning about goal achievement and task orientation. The course operates mainly by committee or group instrumentation. The serious student should work to gain an understanding of the function of informal relationships within formal organizations, the various roles within groups, peer relationships, superior-subordinate relationships, authority and intimacy, and the inclusion and exclusion processes.

50.162 Day Care and Nursery Schools: Social and Cultural Origins

4 Q.H.

An exploration of the origins of the increased contemporary use of out-of-the-family child care arrangements, in the United States and in

selected European and Third World nations. Course topics include the interrelationships of industrialization, technology, and family functioning; contrasting varieties of child care centers in operation today; and effects of the proliferation of child care centers on other aspects of society, such as neighborhood life, business, parents' lifestyles, elementary school curricula, government spending, and the job market in education and human services. Two to four hours per week of fieldwork in a child care center are required of each student.

50.163 Schools as Social Systems 4 Q.H.

(Prereq. 50.114 or equiv.)

Analysis of schools as sociocultural subsystems within the larger society. Functional interrelationship between student and school subcultures; status and role systems; authority structures in American schools. During most quarters, one section of this course focuses on elementary and secondary schools and a second focuses on day care centers and nursery schools; students preregistering should choose the appropriate section.

50.164 Class and Ethnic Relations in Education

(Prereq. 50.114 or equiv.)

4 Q.H.

The various ways in which the American class system and patterns of ethnic group relations have affected, and have been affected by, American education. The limitations and potential of educational institutions with respect to the resolution of intergroup conflicts and the establishment of equal educational opportunities.

50.165 Organization and Politics of School Systems

4 Q.H.

(Prereq. 50.114 or equiv.)

The political sociology of school systems in the United States. An analysis of the power and authority structures in contemporary education. Who decides what and how? Who controls the system? How are the various interest groups organized? What are the mechanisms for conflict resolution? The relationship between professional and nonprofessional interest groups.

50.166 The Human Services Professions 4 Q.H.

(Prereq. 50.114, 21.100, or equiv.)

Explores what a human service agency is, how it comes into being, how it grows and changes. Attitudes, values, skills, and knowledge of the human services worker are analyzed, as are reasons why people in modern society require human services assistance. Human services are viewed from the eyes of clients as well as society as a whole. Fieldwork in a human service agency is a major course component, as is a good deal of independent study. Required for Human Services freshmen and transfers in all Colleges; open to other students on space available basis.

50.167 Education and Psychosocial**Development**

4 Q.H.

(Prereq. 50.114 or equiv.)

(Prereq. 19.135, for Human Services majors)

Theories and research on the socialization functions of education. Topics covered include the relative influence of early vs. post-childhood socialization; professional and adult socialization; the role of diverse educational experiences and institutions in personality development and change. Human Services majors should arrange to take specially designated sections of this course, offered most quarters, after completing 19.135 Personality I.

50.168 Education and Social Change

4 Q.H.

(Prereq. 50.114 or equiv.)

A sociological exploration of educational systems as independent and dependent variables in social change. Instances of planned educational change in various countries and their implications for contemporary American society.

Education—Curriculum and Instruction

51.124 Modern Mathematics Curricula

4 Q.H.

Mathematics curricula in elementary and secondary schools, including experimental programs, presented in their historical setting.

51.126 Teaching Reading in Secondary Schools

4 Q.H.

For English and Social Studies majors in the College of Education who are preparing for teaching in the junior or senior high school. Basically, the same approach and organization applies to this course as to the elementary level course. (One quarter)

51.128 Teaching Music in Elementary Schools

(Prereq. 51.135)

4 Q.H.

An examination of the traditional Orff, Kodaly, Dalcroze, and other approaches to elementary school music. Attention will be given to children's motivations and participation in singing, listening, rhythmic, instrumental, and creative musical activities.

51.128 Teaching Music in Secondary Schools I

(Prereq. 51.135)

4 Q.H.

A study of divergent views and approaches to teaching music to early adolescents. Problems related to curricular and extra-curricular activities, including vocal and instrumental groups, will be examined, with particular attention to the problems of the changing voice. Music will be studied in its relationship to other aspects of the curriculum. Opportunity will be provided to apply group and individual teaching skills.

50.190 Directed Study

4 Q.H.

(Permission)

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Preparation:* Approval of the supervising faculty member and the Dean's Office of the College of Education. Approval forms must be submitted to the Dean's Office during the quarter prior to registration for the Directed Study.

51.129 Teaching Music in Secondary Schools II

(Prereq. 51.135 and 51.128)

4 Q.H.

An examination of a number of concepts, approaches, and curriculum patterns employed in teaching high school music. Attention will be given to music appreciation and music theory and to vocal, instrumental, ensemble, club, and concert areas of performance. Demonstration skills required to teach in high school programs will be explored.

51.131 Fundamentals of Arithmetic I

4 Q.H.

Methods and materials for teaching arithmetic and a structured approach to the subject, stressing the underlying mathematical principles. Topics fundamental to all elementary mathematics programs are included: concepts of set theory, properties of whole numbers and the arithmetic operations on them, numeration systems, logical reasoning, and simple equations and inequalities.

51.132 Fundamentals of Arithmetic II

4 Q.H.

A continuation of 51.131, Fundamentals of Arithmetic I, extended to include the properties of rational numbers and the arithmetic operations on them in both fractional and decimal form; ratio, rate, and percent; problem solving; and geometric ideas suitable to the elementary grades, including measurement and graphing.

51.133 Fundamentals of Reading I

6 Q.H.

The basic, introductory course in development reading for prospective elementary teachers. In the first term, the emphasis is on language and

symbolic process as it relates to beginning reading. Areas of skill development, such as word-recognition and meaning comprehension, are studied in detail, as are some methods and techniques of testing and grouping. An introduction to some reading books and materials, methods of teaching, and the psychology of learning to read. Tutorial work begins with students.

51.134 Fundamentals of Reading II 6 Q.H. (Prereq. 51.133)

A continuation and extension of the first term. Study skills; speed and fluency development areas. The tutorial work is extended and the student is given further opportunity to achieve familiarity with books, materials, and methods.

51.135 Analysis of Teaching and Educational Process 4 Q.H. (Prereq. 50.131)

The relationships that exists between instructional objectives and teaching behavior; applications of theories of human development and learning as they relate to subsequent specialized teaching methods and materials. Research results and promising theory are used to help extend the prospective teacher's concepts of the teaching function.

51.137 Remedial Reading 4 Q.H. (Prereq. 51.134)

For prospective teachers in the primary unit. This introductory course may assist in familiarizing the student with some of the most commonly known reading problems in the typical classroom as well as in the reading clinic; analysis and evaluation of the typical diagnoses of such problems; corrective programs. Tutorial work with a retarded reader, with each student keeping a log or journal of work with a particular reading problem.

51.138 Linguistics and Reading 4 Q.H. (Prereq. 51.134)

For prospective elementary level teachers (primary unit). The major objective is to translate the knowledge gathered from structural and descriptive linguistics into useful classroom instruction, which includes not only reading instruction, but basic instruction in the related language skills. The contributions, particularly of such writers as Fries, Barnhart, Bloomfield, and LeFevre, are experimented with and analyzed.

51.139 Writing and the Teaching of Writing (Prereq. 51.135) 4 Q.H.

A study of the logical and rhetorical bases of exposition and argumentative writing; the role of definition in exposition and argumentation; relationships of assumptions, assertions, and implications; the nature of proof in the sciences, social sciences, and the humanities; strategies of argumentation; the effective consequences of word choice and sentence structure.

51.140 Methods and Materials of Teaching Modern Languages I 4 Q.H.

(Prereq. 51.135)

The most effective types of classroom activities, subject unit organization, assignments, examinations, and teaching aids used in modern language. The role of the language laboratory with its problems of selecting equipment, scheduling pupils, planning tapes and content of drill exercises, evaluating results, and coordinating its functions with conventional classroom instruction.

51.141 Elementary Education Compendium I (Prereq. 51.135) 4 Q.H.

The elementary school of curriculum is analyzed on the basis of the overall objectives of the American elementary school. Students are expected to evaluate and organize units of work which are appropriate to the level at which they plan to teach. The integrated approach to learning is emphasized, with particular focus on science, social studies, and language arts subjects.

51.142 Elementary Education Compendium II (Prereq. 51.141) 4 Q.H.

The objectives, activities, and methods of evaluation in the elementary school are continued, with special attention to the areas of music, art, and physical education.

51.143 Methods and Materials of Teaching English 8 Q.H. (Prereq. 51.135)

An introduction to the structure and functions of language as they apply to teaching English; curriculum and planning in English. The unit approach; specific techniques of teaching reading and literature, grammar and usage, written and oral composition, listening, spelling, vocabulary, and the use of mass media.

51.144 Methods and Materials of Teaching Modern Languages II 4 Q.H. (Prereq. 51.140)

Continuation of Methods and Materials of Teaching Modern Languages I.

51.145 Methods and Materials of Teaching Mathematics 4 Q.H. (Prereq. 51.135)

Theory and practice of teaching secondary mathematics, including a discussion and evaluation of instructional problems. Lesson planning and presentations by individual students afford appropriate practice and serve as the medium of instruction.

51.146 Reading/Study Skills I 4 Q.H.

Designed to provide instruction in study and organizational skills to students who demonstrate a need in these areas. The skills of previewing, locating main ideas and related details, outlining, summarizing, note taking, and vocabulary development will be explored and applied to the content of courses that students may be taking as part of their requirements.

51.147 Methods and Materials of Teaching the Sciences 4 Q.H.

(Prereq. 51.135)

The prospective science teacher is introduced to the philosophies of science and their applicability in society and the secondary school, principles of developing and applying the science curriculum, and pertinent methods and materials in science education.

51.148 Reading/Study Skills II 4 Q.H.

(Prereq. 51.146 and instructor's consent)

This course is an extension of Reading/Study Skills I and will expand upon such previously examined topics as organizational skills necessary for effective handling of text materials, note taking, vocabulary development, and comprehension. New topics will include preparing for and writing examinations, writing and revising research papers, and an introduction to library skills. All skill work is expected to be applied to concurrent coursework.

51.149 Methods and Materials of Teaching**Social Studies** 4 Q.H.

(Prereq. 51.135)

A field-oriented course conducted off campus in one or more schools of cooperating public school systems where College of Education students work with pupils individually and in small groups. Techniques of planning, developing curriculum materials, using audio-visual equipment, simulations, developing and implementing evaluation instruments, presenting original materials in class.

51.150 Supervised Field Placement: Early Childhood 2 Q.H.

(Prereq. Early Childhood sequence through 51.142)

A University arranged institutional placement to allow students the opportunity to provide educational, remedial, and/or custodial services to children generally of ages two through five. Opportunity will be provided to analyze, develop, demonstrate, and evaluate skills and techniques in guiding the activities of children in nursery schools, day care centers, and/or kindergartens.

51.151 Student Teaching and Seminar 8 Q.H.

(Prereq. Formal acceptance into and completion of advanced professional sequence with minimum 2.0 Q.P.A., both overall and in teaching major)

Full-time participation in a university-arranged and supervised school program designed to provide opportunity for the analysis of learning and teaching and for the demonstration, evaluation, and development of teaching skills.

51.152 Children's Literature 4 Q.H.

(Prereq. 51.134)

For prospective teachers in the primary unit. A comprehensive survey and critical analysis of the books and materials available for basic

reading instruction and for supplementary reading activities. After a massive review of the available literature for children, especially in grades K-3, each student is responsible for developing material for trial with subjects. The ultimate goal is to help the student to become aware of what is available and how to use it most effectively in a reading program.

51.153 Current Issues in Teaching the Gifted and Talented 4 Q.H.

(Prereq. 50.121 or 50.131)

Students will have the opportunity to examine screening devices for identifying the gifted and talented and to evaluate their effectiveness. Different philosophical postures and grouping strategies will be analyzed in relation to individual needs and the needs of a democratic society. Advantages and disadvantages of homogeneous and heterogeneous grouping will be explored. Cognitive, perceptual, psychomotor, social, aesthetic, and ethical needs will be emphasized. Instructional approaches and materials for the gifted will be examined in relation to this broad spectrum of needs.

51.190 Directed Study I 4 Q.H.

(Prereq. Permission)

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Preparation:* Approval of the supervising faculty member and of the Dean's Office of the College of Education. Approval forms must be submitted to the Dean's Office during the quarter prior to registration for the Directed Study.

51.191 Directed Study II 4 Q.H.

(Prereq. 51.190)

For students who have completed 51.190, Directed Study I. The preparation for this course is the same as that for the Directed Study I course.

Education—Speech and Hearing

55.122 Introduction to Speech and Hearing

4 Q.H.

An overview of disorders of speech and hearing and their treatment. A review of normal speech and hearing development.

55.123 Speech Science

4 Q.H.

(Prereq. 55.122 and 55.126)

An understanding of the basic sciences involved in speech and audition. An in-depth study of the analysis of sound and the acoustic composition of speech. Emphasis is placed upon a review of current theory and research in speech reception, perception, and production.

55.125 Hearing Science

4 Q.H.

(Prereq. 55.122)

Basic concepts related to the physics of sound will be presented followed by an in-depth study of the anatomy and physiology of the normal hearing mechanism. In addition, basic principles of psychophysics of audition will be discussed.

55.126 Anatomy and Physiology of Vocal Mechanisms

4 Q.H.

(Prereq. 55.122)

An in-depth study of the static structures, musculature, and physiology of the speech mechanism. Current research in speech physiology will be emphasized.

55.131 Developmental Semantics and Syntax

4 Q.H.

An analysis of the emerging semantic and syntactical aspects of language in normal and atypical children. Discussion of current theory and research in language acquisition will be stressed.

55.133 Phonetics and Developmental Phonology

4 Q.H.

(Prereq. 55.123)

A basic training in auditory recognition and symbolization of phonemes and allophones in major American dialects. Static and dynamic articulatory descriptions will be stressed. A review of the developmental sequence of phonemic acquisition.

55.141 Phonemic Disorders

4 Q.H.

(Prereq. 55.126 and 55.131)

A practical and theoretical understanding of the phonemic disorders and their etiology; diagnostic tools for evaluation and methods of treatment.

55.142 Introduction to Audiology

4 Q.H.

(Prereq. 55.123)

The basic techniques of audiometric testing and hearing conservation. A review of basic hearing sciences included.

55.143 Diagnostic Techniques

4 Q.H.

(Prereq. 55.126, 55.133)

A presentation and review of diagnostic tests

and procedures in speech pathology. Emphasis on the parent interview, the oral examination, and the appraisal of phonemic, phonatory, language, fluency, and auditory disorders.

55.144 Orientation to Clinical Practices

4 Q.H.

(Prereq. Senior Status)

Designed to introduce the student to the Hearing, Language and Speech Center. The student will be exposed, through direct observation, to the interpersonal aspects of communication in therapeutic relationships.

55.154 Fluency Disorders

4 Q.H.

(Prereq. 55.126)

Stresses the nature, theories, and treatment of fluency disorders.

55.155 Clinical Practice and Seminar

8 Q.H.

(Prereq. 55.144)

Provides the student with initial involvement in the clinician-client relationship.

55.159 Basic Manual Communication Systems

4 Q.H.

(Prereq. 19.196)

The use of manual communication systems in deaf education (Manual English, SEE, and Signed English). Discussions will cover the goals and assumptions underlying these systems, their relation to American Sign Language and English, and the application of these systems in educational and clinical systems. Instruction will be provided in introductory level English sign language, using the O'Rourke ABC book as a text.

55.160 Directed Study

4 Q.H.

(Prereq. Permission)

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Preparation:* Approval of the supervising faculty member and the Dean's Office of the College of Education. Approval forms must be submitted to the Dean's Office during the quarter prior to registration for the Directed Study.

Education—Special Education and Rehabilitation

56.120 Introduction to Special Education 4 Q.H.

A survey of the characteristics and the social, emotional, and educational adjustment of special-needs individuals. The effects of society's attitudes, the individual's own attitude toward the handicap, and the effect of the handicap itself are evaluated. Current legislation will be reviewed.

56.121 Introduction to Learning

Disabilities 4 Q.H.
(Prereq. 56.120)

This course surveys behavioral characteristics of children who present specific deficits in perceptual, integrative, or expressive processes which impair learning efficiency. Students are expected to work to develop competencies in diagnosing curriculum materials and teaching methods.

56.124 Diagnostics in Special Education 4 Q.H. (Prereq. 56.120 and 56.121)

Students should work to develop competence in 1) observing, recording, and analyzing children's behavior and learning environments, including continuous measurement and informal assessment of specific, general, and behavioral learning needs; and in 2) techniques of formal assessment of general, specific, and behavioral learning needs.

56.126 Methods and Materials of Teaching in Special Education 4 Q.H.

(Prereq. 56.120, 56.121, 56.124 or senior status)
Course instruction will focus on the following areas: 1) development and implementation of individualized educational plans, including task analysis, adaptation and selection of materials, strategies in applied classroom management techniques; and 2) adaptation and selection of materials and strategies in language arts, mathematics, and perceptual-motor skills.

56.130 Introduction to Emotional Disturbances in Children 4 Q.H.

(Prereq. 56.120 or permission)
Review of emotional processes which interfere with learning behavior and a study of approaches used to deal with behavioral disorders. Emphasis will be on classroom management techniques, use of consultation, and parent-teacher interaction.

56.135 Socio-Pscho Dynamics of Family Life 4 Q.H.

An introduction to and survey of the internal and external dynamics of family life. The significance of such dynamics to the mental health of the special needs child will be examined. The approaches to working with parents and the school-home relationships, as well as the effects of disability on the family, will be explored.

56.140 Psychology of the Mentally Retarded

4 Q.H.
Analysis of the etiology, nature, and needs of the retarded individual, emphasizing cognitive and psychosocial development. Implications of these characteristics for life-span management are explored in conjunction with parental and community attitudes and involvement.

56.150 Introduction to Rehabilitation 4 Q.H.

Overview of and orientation to the field of rehabilitation, including its historical development, psychological implications, and sociological dimensions. Special attention will be paid to rehabilitation of specific disability groups such as the physically disabled, emotionally disturbed, mentally retarded, alcoholic, drug dependent, and public offender.

56.190 Directed Study 4 Q.H. (Prereq. Permission)

This experience is provided for the student whose unique academic needs or interests cannot be adequately satisfied in any of the scheduled courses of the Department. *Preparation:* Approval of the supervising faculty member and of the Dean's Office of the College of Education. Approval forms must be submitted to the Dean's Office during the quarter prior to registration for the Directed Study.

93.230 Field Experience in Human Services I 4 Q.H.

Human Services students are required to fulfill two fieldwork placements during the last two years of their program. Each placement consists of 150 hours on site. The type of placement varies according to the student's interest. Field experiences are supervised by University staff to maximize the student's learning opportunity.

93.231 Field Experience in Human Services II 4 Q.H.

(Prereq. 93.230 and Senior status, permission only)
Continuation of 93.230.

Physical Education

62.10A Beginning Swimming 1 Q.H.
Instruction in basic swimming skills, with emphasis on personal water safety.

62.10B Intermediate Swimming 1 Q.H.
(Prereq. 62.10A or equiv.)
Instruction in basic and advanced swimming skills, with emphasis on form and efficiency.

62.10C Advanced Swimming 1 Q.H.
(Prereq. 62.10B or equiv.)
Instruction in advanced swimming skills, with emphasis on form and efficiency.

62.10G Water Polo 1 Q.H.
(Prereq. 62.10B or equiv.)
Instruction in beginning water polo, with emphasis on personal skill, offensive and defensive team play.

62.10H Advanced Life Saving 2 Q.H.
(Prereq. 62.10B or equiv.)
Instruction in Red Cross life-saving skills, techniques, and theory. Red Cross certification is possible.

62.10L Water Safety Instructor 2 Q.H.
(Prereq. 62.10B, 62.10K)
Instruction in techniques, theory, and teaching methods in swimming and life-saving courses. Red Cross certification is possible.

62.10M Beginning Scuba 2 Q.H.
(Prereq. 62.10B or equiv.)
Instruction in basic skin-diving and scuba-diving skills, with emphasis on personal safety.

62.10R Small Crafts 1 Q.H.
Introduction to basic skills in boating, canoeing and sailing.

62.12A Folk and Square Dance I 1 Q.H.
Introduction to folk and square dance at the beginning and intermediate levels.

62.12B Folk and Square Dance II 1 Q.H.
(Prereq. 62.12A)
Instruction in folk and square dance at the intermediate and advanced levels.

62.12E Modern Dance I 1 Q.H.
Introduction to modern dance technique and style.

62.12F Modern Dance II 1 Q.H.
(Prereq. 62.12E or equiv.)
A continuation of 62.12E with progression to more complex modern dance techniques and movement combinations. Practice in the use of improvisation for exploring dance movement.

62.12G Modern Dance III 1 Q.H.
(Prereq. 62.12F or equiv.)
A continuation of 62.12F. Progression into the expressive and choreographic use of modern dance techniques.

62.12H Ballet I 1 Q.H.
Introduction to the fundamentals of classical ballet; its vocabulary, structure, and style.

62.12J Ballet II 1 Q.H.
(Prereq. 62.12H or equiv.)
A continuation of 62.12H. Progression into the expressive and choreographic use of classical ballet techniques.

62.12K Ballet III 1 Q.H.
(Prereq. 62.12S)
A continuation of 62.12J with an in-depth study of complicated variations derived from the classical ballet technique.

62.12L Jazz Dance I 1 Q.H.
Introduction to jazz dance techniques and styles.

62.12M Jazz Dance II 1 Q.H.
(Prereq. 62.12L or equiv.)
Continuation of 62.12L, with progression to more complex jazz dance techniques and combinations.

62.12N Jazz Dance III 1 Q.H.
(Prereq. 62.12M or equiv.)
A continuation of 62.12M and progression into the choreographic process of jazz dance.

62.12P Rhythmic Analysis 1 Q.H.
(Prereq. Physical Education major or permission)
Analysis of rhythm as it applies to movement skills and basic dance.

62.12Q Ballroom and Disco Dance 1 Q.H.
An introduction to ballroom dance and contemporary disco dancing.

62.12R Ballroom Dance 1 Q.H.
An introduction to traditional and contemporary ballroom dance.

62.12S Dance Improvisation/Composition 1 Q.H.
(Prereq. 62.12E, H, or L)
Practice in the use of dance as a medium for artistic expression. Emphasis on the development of skill in the use of improvisational techniques. The student is expected to participate in creating and structuring short dance compositions.

62.13P Gymnastics Orientation 1 Q.H.
Basic approach to tumbling, vaulting, and trampoline. Designed to assist the non-gymnast.

62.13V Beginning Gymnastics I 1 Q.H.
(Prereq. 62.13P or equiv.)
A coeducational approach to knowledge and basic skills in floor exercise, vaulting, balance beam, parallel bars, uneven bars, high bar, and rings.

62.13W Women's Gymnastics II 1 Q.H.
(Prereq. 62.13V)
Focus on knowledge and skill necessary in performing the beginning compulsory routines on the balance beam, floor exercise, uneven bars, and vaulting.

62.13X Women's Gymnastics III (Prereq. 62.13W)	1 Q.H.	level. Emphasis is on course play, rules, and selection of equipment.
Skill and knowledge related to the performance of optional routines in the four areas of competitive women's gymnastics.		
62.13Y Men's Gymnastics II (Prereq. 62.13V)	1 Q.H.	62.15H Beginning Judo 1 Q.H.
Knowledge and skill related to the performance of beginning compulsory routines on the high bar, side horse, rings, floor exercise, parallel bars, and vaulting horse.		A survey of the principles and fundamental skills of judo. Instruction is geared to the beginning and intermediate levels.
62.12Z Men's Gymnastics III (Prereq. 62.13Z)	1 Q.H.	62.15I Karate 1 Q.H.
Skill and knowledge related to performance in optional routines on the high bar, side horse, rings, floor exercise, parallel bars, and vaulting horse.		Fundamental techniques of unarmed combat for self-defense using the punches, kicks, and blocks of Tae Kwan Do/Karate.
62.14A Badminton 1 Q.H.		62.15J Beginning Boxing 1 Q.H.
Instruction in basic badminton strokes, concepts, rules, strategies, and game play.		Instruction in boxing at the beginning level; emphasis on offensive and defensive techniques, scoring, training, and officiating.
62.14B Beginning Squash Racquets 1 Q.H.		62.15K Beginning Wrestling 1 Q.H.
Introduction to squash racquets at the beginning level; development of skills, rules, strategy, and etiquette.		Beginning level of instruction in basic wrestling maneuvers. Stress on fundamental breakdowns, escapes, takedowns, rides, and pinning combinations. Rules and scoring procedures discussed and modified matches conducted.
62.14C Tennis 1 Q.H.		62.15L Intermediate/Advanced Wrestling 1 Q.H.
Instruction in basic tennis strokes, concepts, rules, strategies, and game play.		(Prereq. 62.15K or equiv.)
62.14E Intermediate/Advanced Badminton 1 Q.H.		Intermediate-advanced level of instruction presented. Emphasis is placed on training, training principles, and selected topics not covered in beginning wrestling, such as scrimmages and officiating.
(Prereq. 62.14A)		62.15M Beginning Fencing 1 Q.H.
Instruction in badminton, including intermediate and advanced skills, with emphasis on singles and doubles match play and strategy.		Instruction in basic foil fencing, including introduction to competition.
62.14G Intermediate/Advanced Tennis 1 Q.H.		62.15N Intermediate/Advanced Foil Fencing 1 Q.H.
(Prereq. 62.14C or equiv.)		(Prereq. 62.15M or equiv.)
Instruction in tennis, including intermediate and advanced skills, with emphasis on singles and doubles match play and strategy.		Instruction in intermediate-advanced techniques of foil fencing, with special emphasis on competition, judging, and the use of electrical equipment.
62.15A Movement Education 1 Q.H.		62.15Q Karate II 1 Q.H.
Concepts and techniques in movement education and exploration for elementary school educators.		(Prereq. 62.15I)
62.15B Beginning Archery 1 Q.H.		Continuation of 62.15I, with progression to more complex techniques and combinations of punches, kicks, and blocks related to Tae Kwan Do/Karate.
Selected skills in target shooting and practical experience in archery games, novelty events, and conduct of tournaments.		62.16B Weight Training 1 Q.H.
62.15D Beginning Bowling 1 Q.H.*		Introduction to the principles and use of resistive exercises: isotonic exercise (weights), isometric exercise, and the appropriateness of each.
Focus on development of knowledge and skill necessary for competent performance in bowling at the beginning level. Practice provided in nearby commercial alleys.		62.16C Physical Conditioning 1 Q.H.
62.15F Beginning Golf 1 Q.H.		Assessment of physical fitness and body composition. Instruction in training techniques. Special emphasis on personal exercise and dietary needs.
Instruction in fundamental golf skills, knowledge of clubs and their use, and golf etiquette.		62.16I Beginning Cross-Country Skiing 1 Q.H.*
62.15G Intermediate/Advanced Golf 1 Q.H.*		Instruction in the fundamental techniques of cross-country skiing.
(Prereq. 62.15F or equiv.)		
Instruction in golf at the intermediate-advanced		

*Lab fee required.

62.16J Beginning Skiing and Winter Sports

2 Q.H.*

Instruction in fundamental techniques of skiing and skating.

62.16K Intermediate/Advanced Skiing and Winter Sports

2 Q.H.*

(Prereq. 62.16J or equiv.)

Instruction in skiing and skating at the intermediate-advanced level. Emphasis placed on skills, teaching, techniques, and safety procedures.

62.16L Beginning Track and Field

1 Q.H.*

Instruction in the fundamental skills in the various track and field events.

62.16M Intermediate/Advanced Track and Field

1 Q.H.

(Prereq. 62.16L or equiv.)

Instruction in intermediate-advanced techniques in track and field events. Emphasis is placed on improvement of individual skills; techniques of officiating are discussed.

62.16P Beginning Handball

1 Q.H.

Knowledge and skills appropriate to handball at the beginning level.

62.16Q Intermediate/Advanced Handball

1 Q.H.

(Prereq. 62.16P)

Knowledge and skills appropriate for performance in handball at the intermediate to advanced levels.

62.16R Beginning Racquetball

1 Q.H.*

Knowledge and skills appropriate for performance in racquetball at the beginning level.

62.17C Basketball

1 Q.H.

Knowledge and skills appropriate for performance in basketball at the beginning level.

62.17D Intermediate/Advanced Basketball

1 Q.H.

(Prereq. 62.17C)

Knowledge and skills appropriate for performance in basketball at the intermediate to advanced levels.

62.17J Volleyball

1 Q.H.

Knowledge and skills appropriate for playing volleyball at the beginning level.

62.17K Intermediate/Advanced Volleyball

1 Q.H.

(Prereq. 62.17J)

Knowledge and skills appropriate for playing volleyball at the intermediate to advanced levels.

62.17L Field Hockey

1 Q.H.

Knowledge and skills appropriate for playing field hockey at the beginning level.

62.17M Intermediate/Advanced Field Hockey

1 Q.H.

(Prereq. 62.17L)

Knowledge and skills appropriate for playing field hockey at the intermediate to advanced levels.

62.17P Football

1 Q.H.

Fundamental skills and knowledge appropriate for beginning level performance in football.

62.17Q Intermediate/Advanced Football

1 Q.H.

(Prereq. 62.17P)

Knowledge and skill appropriate for football at the intermediate/advanced levels.

62.18C Softball

1 Q.H.

Knowledge and skill appropriate for performance in softball at the beginning level.

62.18D Intermediate/Advanced Softball

1 Q.H.

(Prereq. 62.18C)

Knowledge and skill appropriate for softball at the intermediate/advanced levels.

62.18E Baseball

1 Q.H.

(Prereq. 62.18C or consent)

Knowledge and skill appropriate for baseball at the intermediate and advanced levels.

62.18G Women's Lacrosse

1 Q.H.

Knowledge and skill appropriate for performance in lacrosse at the beginning level.

62.18H Intermediate/Advanced Women's Lacrosse

(Prereq. 62.18G)

1 Q.H.

Knowledge and skill appropriate for intermediate and advanced women's lacrosse.

62.18J Men's Lacrosse

1 Q.H.

Knowledge and skill appropriate for performance in lacrosse at the beginning level.

62.18K Intermediate/Advanced Men's Lacrosse

(Prereq. 62.18J)

1 Q.H.

Knowledge and skill appropriate for intermediate and advanced men's lacrosse.

62.18M Soccer

1 Q.H.

Knowledge and skill appropriate for performance in soccer at the beginning level.

62.18N Intermediate/Advanced Soccer

1 Q.H.

(Prereq. 62.18M)

Knowledge and skill appropriate to intermediate/advanced levels in soccer.

62.19A Early Childhood Motor Skill Development

2 Q.H.

A study of the development of fundamental motor patterns (run, catch, kick, strike, jump, throw) from ages 0 to 10 years, including perceptual-motor relations operating in vision, audition, and proprioception.

62.19B Games and Activities for Children

2 Q.H.

Introduction to simple ball games, running and tag games, self-testing activities, movement exploration, and rhythms appropriate for children. Course content appropriate for future parents, teachers, and youth leaders.

62.200 Human Movement

3 Q.H.

An introduction to the nature and role of human movement and the analysis of skillful movement performance through participation and observation. Introduction to the objectives, literature, and organization of the profession of physical education.

62.202 Life/Career Planning

3 Q.H.

An examination and exploration of careers in physical education and related fields. The course provides an opportunity for students to assess personal skills and abilities, to research jobs of interest, and to practice specific career-planning skills.

62.203 Group Dynamics

4 Q.H.

An introduction to group dynamics through selected activities, discussion, and living and working together. As this is an experiential course, a resident-living experience for one week at the Warren Center is an integral part of the course.

62.204 Psychology of Sport

2 Q.H.

(Prereq. P.E. or consent)

The psychological analysis of behavioral patterns and deviations of sports participants, including spectators and coaches. Emphasis on emotions, motivation, competition and learning factors. Discussion of current sports highlights.

62.205 Group Dynamics I

3 Q.H.

(Prereq. 62.202)

An introduction to group dynamics through selected activities, discussion, and living and working together. A resident-living experience for one week at the Warren Center is an integral part of the course.

62.206 First Aid

2 Q.H.

First-aid procedures recommended for the home, school, and community. Emphasis on practices endorsed by the American Red Cross.

62.208 Sociology of Sport and Dance

2 Q.H.

(Prereq. Consent of instructor)

The study of sport and dance as a social institution, including theories explaining the role of each in contemporary society and the part of each in evolving societies.

62.209 History and Philosophy of Physical Education

3 Q.H.

A survey of physical education from ancient times to the present. The influence of major philosophical positions upon the nature of physical education programs is analyzed.

62.210 History and Philosophy of Physical Education

4 Q.H.

A survey of physical education from ancient times to the present. The influence of major philosophical positions upon the nature of physical education programs is also analyzed.

62.211 Comparative Physical Education

3 Q.H.

(Prereq. 62.210 or 50.152)

Analysis of systems of physical education and sport in selected countries and their interrelations with the larger cultural framework.

62.212 Theory of Coaching

2 Q.H.

(Prereq. Consent of instructor)

An analysis of learning principles, sociology, and psychology as applied to coaching in-

dividual, dual, and team sports. Techniques and standards of squad recruitment, organization, leadership, and coaching ethics are presented.

62.217 Theory of Play

2 Q.H.

The nature of play and a study of cross-cultural patterns of play. An investigation of selected theories of play, including Huizinga, Caillois, Sutton-Smith, and Lee.

62.218 Elementary School Activities

4 Q.H.

(Prereq. 50.121)

Focus on the knowledge and skills necessary for elementary school-aged children to participate in the following activities: dance, gymnastics, movement education, low organization games, lead-up games, and aquatics. Analysis of elementary school children's performance and appropriate teaching techniques for the age level are observed and applied through observations and laboratory experience.

62.220 Perceptual Motor Development

4 Q.H.

(Prereq. 50.121, 50.131, 19.141 or 19.142)

Study of the development of motor skills from birth through infancy, early childhood, adolescence and adulthood, including skilled performance of the aged. Age expectations for perceptual-motor behavior are considered, with a focus on functional adequacy in skilled performance.

62.221 Perceptual Motor Learning and Development

3 Q.H.

(Prereq. 50.121)

Interrelationships of movement behavior and perceptual-motor organizations of vision, audition, and proprioception. A brief overview of major theories of learning as they apply to learning motor skills.

62.222 Perceptual-Motor Learning

4 Q.H.

(Prereq. 19.149, 19.156, 19.157)

A focus on the way information processing is involved in perceptual-motor learning and performance. Basic research data are applied to learning and executing skills in a variety of sports settings.

62.24B Swimming Analysis

2 Q.H.

(Prereq. 62.10B or consent of instructor)

Instruction in theory, analysis techniques, and teaching methods in swimming.

62.24E Analysis and Coaching of Men's Gymnastics

2 Q.H.

(Prereq. 62.13T)

Skill analysis and coaching of men's gymnastics, with emphasis on appropriate teaching methods, new trends, and judging.

62.24F Analysis and Coaching of Women's Gymnastics

2 Q.H.

(Prereq. 62.13Y)

Skill analysis and coaching of women's gymnastics, with emphasis on appropriate teaching methods and new trends.

62.24G Advanced Analysis and Judging of Women's Gymnastics 2 Q.H.

(Prereq. 62.13W)

Advanced skill analysis techniques and instruction in judging women's gymnastics. May serve as preparation for judging certification.

62.24H Analysis and Coaching of Badminton 2 Q.H.

(Prereq. 62.14E)

Analysis of performance and methods of teaching and coaching in badminton.

62.24J Analysis and Coaching of Tennis 2 Q.H.

(Prereq. 62.14G)

Analysis of performance and methods of teaching and coaching in tennis.

62.24K Analysis and Coaching of Fencing 2 Q.H.

(Prereq. 62.15N or 62.15P)

Advanced skill analysis and coaching of fencing. Special emphasis on current research and teaching methods.

62.24L Analysis and Coaching of Golf 2 Q.H.*

(Prereq. 62.15G or equiv.)

Advanced skill analysis and coaching of golf. Special emphasis on course play and teaching methods.

62.24M Analysis and Coaching of Track/Field 2 Q.H.

(Prereq. 62.16M or equiv.)

Advanced skill analysis and coaching techniques for selected track and field events. Special emphasis is placed on the analysis of common movement patterns, teaching methods, and coaching techniques.

62.24N Analysis and Coaching of Wrestling 2 Q.H.

(Prereq. 62.15L or equiv.)

Analysis of performance and techniques of teaching selected wrestling skills are covered in detail. Application of research to methodology is stressed.

62.24P Analysis and Coaching of Baseball 2 Q.H.

(Prereq. 62.18E)

The basic techniques and responsibilities of coaching interscholastic and intercollegiate baseball; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

62.24Q Analysis and Coaching of Basketball 2 Q.H.

(Prereq. 62.17C)

The basic techniques and responsibilities of coaching interscholastic and intercollegiate basketball; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

62.24R Analysis and Coaching of Field Hockey 2 Q.H.

(Prereq. 62.17K)

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate field hockey; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

62.24S Analysis and Coaching of Football 2 Q.H.

(Prereq. 62.17Q)

The basic techniques and responsibilities of coaching interscholastic and intercollegiate football; to include advanced skill analysis, team conditioning, offensive and defensive systems, practice organization, team management, and coaching staff organization.

62.24V Analysis and Coaching of Lacrosse 2 Q.H.

(Prereq. 62.18A or 62.18K)

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate lacrosse; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

62.24W Analysis and Coaching of Soccer 2 Q.H.

(Prereq. 62.18N)

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate soccer; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

62.24X Analysis and Coaching of Softball 2 Q.H.

(Prereq. 62.18D)

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate softball; to include advanced skill analysis and management.

62.24Y Analysis and Coaching of Volleyball (Men-Women) 2 Q.H.

(Prereq. 62.17J)

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate volleyball, including advanced skill analysis, position and team play, conditioning, practice organization, and team management.

62.24Z Analysis and Coaching Special Problems 2 Q.H.

(Prereq. Permission Dept. Chairperson) Designed as directed study in a sport or activity not offered by the Department or in special scheduling situations.

62.248 Clinical Athletic Training 2 Q.H.

(Prereq. 62.256)

The student athletic trainer's introduction to clinical experience with an opportunity to practice the various skills for evaluation and treatment of the injured athlete.

62.250 Anatomy and Physiology I 4 Q.H.

Gross anatomy and physiology of the human skeletal, joint, nervous and muscular systems.

62.251 Anatomy and Physiology II 4 Q.H.

(Prereq. 62.250)

Gross anatomy and physiology of the human respiratory, endocrine, and circulatory systems; metabolism, calorimetry, and other topics will be covered.

62.253 Kinesiology 4 Q.H.

(Prereq. 62.250 or equiv.)

Science of human motion and anatomic and

mechanical principles as they relate to an understanding of skillful, efficient, and purposeful human motion. Introduction to cinematographic analysis.

62.254 Exercise Physiology 4 Q.H.
(Prereq. 62.251)

Study of the immediate and long-range effects of exercise upon the human body, with emphasis on the cardiovascular and respiratory systems, muscles, and metabolism; physical fitness, body composition, and selected components of motor performance—assessment techniques and training principles. Introduction to indirect, open-circuit calorimetry and EKG monitoring.

62.255 Adapted Physical Education I 4 Q.H.
(Prereq. 62.222, 62.250, 62.253)

Survey of characteristics and attitudes pertaining to special-needs individuals, with particular emphasis on their effects on current physical activity programs. Observations of special-needs programs are included.

62.256 Athletic Training and Conditioning 3 Q.H.

The training and conditioning procedures in athletic programs; special emphasis on the prevention of athletic injuries; role of the trainer, athlete, coach, and health service.

62.257 Advanced Athletic Training 4 Q.H.
(Prereq. 62.256)

The advanced preparation and utilization of conditioning programs and their administration for prevention and care of injuries associated with competitive athletics.

62.258 Advanced Kinesiology 4 Q.H.
(Prereq. 62.263)

A continuation of the study of anatomic and mechanical considerations as they apply to the analysis of motor skill performance. Emphasis upon the application of anatomic and mechanical principles to the analysis of selected sports techniques. An introduction to biomechanic instrumentation.

62.259 Laboratory in Exercise Testing and Prescription 4 Q.H.
(Prereq. 62.254)

Practicum in assessment of physical work capacity, cardiac function, muscular strength, muscular endurance, flexibility, and body composition; prescription of exercise programs used to improve the above functions; volunteer work as an exercise test technician and exercise leader in a fitness class.

62.260 Measurement and Evaluation 4 Q.H.
Construction, use, selection, and interpretation of evaluative tools applicable to physical education; elementary statistical methods.

62.263 Kinesiology II 4 Q.H.
(Prereq. 62.253)

A continuation of Kinesiology I, with emphasis on the mechanical aspects of human motion.

The internal and external forces acting upon a human body, and the effects produced, will be examined.

62.265 Adapted Physical Education II 4 Q.H.
(Prereq. 62.255)

Assessment, diagnostic, and prescriptive procedures in special-needs physical education programs. Emphasis is on modification techniques and integration of programming in accord with legislative guidelines. Practicum experiences in special-needs settings are included.

62.267 Principles of Physical Activity for the Older Adult 4 Q.H.

Principles of physical activity and the organizations of physical activity programs for the elderly in public and private agencies will be studied. Research and practical applications of theory will be required.

62.270 Administration of Physical Education 4 Q.H.
(Prereq. 62.209 or 62.210)

The organization and administration of programs in physical education, with emphasis on the elementary and secondary school program.

62.273 Sports Officiating 2 Q.H.

Theory, practice, and techniques of officiating in such sports as basketball, volleyball, softball, soccer, field hockey, lacrosse.

62.274 Sports Officiating 2 Q.H.

Theory, practice, and techniques of officiating in such sports as basketball, volleyball, softball, soccer, field hockey, lacrosse.

62.275 Critical Teaching Skills 3 Q.H.

Experience using the taxonomies of educational objectives to write, conduct, and evaluate educational and behavioral objectives. Analysis of direct and indirect, verbal and nonverbal teaching methods for classroom and activity teaching to be studied by microteaching, simulation, and interaction analysis techniques.

62.277 Outdoor Teaching Lab 2 Q.H.

Provides opportunities for counseling, teaching, and leadership roles in special camp programs, sports, nature, pioneering, arts and crafts, and aquatics.

62.278 Group Dynamics II 2 Q.H.
(Prereq. 62.205)

Exposure to outdoor activities, along with involvement in Project Adventure and other outdoor pursuits, to teach various skills.

62.280 Curriculum Development 3 Q.H.
(Prereq. 62.275 or consent of instructor)

Basic foundations of curriculum development, stressing fundamental principles and guides to curriculum organization, format, and evaluation. Survey of existing curricula and understanding current curriculum trends.

62.282 Supervised Student Teaching 12 Q.H.
(Prereq. Senior status in major or consent)

Assignment to public school(s) for observation

and practice teaching under the guidance of a cooperating teacher and a college supervisor. Association with the main duties assumed by physical education teachers, including coaching and/or intramural organization and supervision. Individual conferences and seminars.

62.283 Modern Dance Composition 3 Q.H.
(Prereq. 62.12F or consent of instructor)

An analysis of dance composition, with practice in choreography for solo, duet, and trio.

62.284 Dance History and Philosophy 4 Q.H.
A survey of dance from ancient times to the present. Consideration of dance as an art form in relation to other art forms and as an educational discipline.

62.286 Dance: Choreography and Production 4 Q.H.

Choreography for trio, quartet, and large groups based upon the projection of an idea or mood. Theory and practice in the staging of student choreography, including lighting, costuming, scenery, and makeup.

62.287 Jazz Dance Composition 3 Q.H.
(Prereq. 62.12M)

Theory and practice in the use of eurhythmics as applied to jazz movement. Progression to dance composition for jazz theatre and musical comedy.

Recreation Education

63.12A Social Recreation 1 Q.H.

An introductory course aimed at helping participants develop skill in selecting appropriate social recreational activities for meaningful programs and employing effective methods of organizing and teaching these activities to groups. Content areas to be explored include active, passive, paper and pencil, and table games, and mixers.

63.12B Social Recreation II 1 Q.H.

The basic objectives of this course are aimed at helping students develop the skills with which to organize various social recreational activities into meaningful and effective social recreation programs for children, youths, young adults, senior citizens, and residents in nursing homes.

63.12C Basic Folk Dance 1 Q.H.

A survey of basic national and international folk dances appropriate for use with a wide range of age groups. Appreciating and understanding the values and program potential of folk dance receives primary consideration. General techniques of teaching are included.

63.12D Dramatic Games 1 Q.H.

A survey of dramatic games and activities suitable for use in recreational programs in camps, playgrounds, hospitals, nursing homes,

62.289 Creative Dance I 2 Q.H.*
(Prereq. 62.12F or equiv.)

Theory and practice of methods and materials in teaching creative dance to elementary school children. Examination of the aims and responsibilities of dance education at the primary level.

62.290 Creative Dance II 2 Q.H.*
(Prereq. 62.12F or equiv.)

Theory and practice of methods and materials in teaching creative dance to secondary school children. Examination of the aims and responsibilities of dance education at the secondary level.

62.291, 62.292, 62.293 Special Programs 2, 3, or 4 Q.H.
(Prereq. Consent of Dept. Chairperson)

Independent investigation of physical education in an area of each student's interests. The investigation will be supervised by an appointed faculty member and will culminate in a formal written report.

and community and agency settings. Basic nature of this course is participation and creative demonstrations of these activities.

63.12E Paper Crafts 1 Q.H.

The use of paper to create "illusions." The primary study area includes paper design, veiling and folding, and sketching with pencil, charcoal, and pastels. The study of perspective and the use of water colors and acrylics in painting are also covered.

63.12F Sculpture 1 Q.H.*

An introduction to various simple forms of sculpture, including papier mache, soap, stone, wire, clay, and wood.

63.12G Textiles 1 Q.H.*

An introduction to textile printing, weaving, and macrame. The course includes block printing, silk-screen printing, tie dyeing, batik, string designing, macrame, and simple handloom weaving.

63.12H Inexpensive Crafts 1 Q.H.*

A course employing the use of collected scrap materials in arts and crafts programs.

63.12I Guitar I 1 Q.H.

An introduction to using the guitar in recreation programs. Skill development includes basic chords, progressions, and strumming techniques.

63.12J Guitar II

1 Q.H.

(Prereq. 63.12I)

Concentration includes basic picking techniques, the use of bass notes to enhance music, additional progressions and chords.

63.12K Square Dance

1 Q.H.

The student is given the opportunity to develop skills in performance, teaching, and calling. The course covers beginning through advanced square and contra dances. Information on historical development also included.

63.12L International Folk Dance I

1 Q.H.

A survey of the folk dances of northern Europe, Scandinavia, and Mediterranean countries. The course concentrates on performance skills, teaching skills, and appreciation.

63.12M International Folk Dance II

1 Q.H.

A survey of the folk dances of the British Isles, central Europe, and South American countries. The course concentrates on performance skills, teaching skills, and appreciation.

63.12N International Folk Dance III

1 Q.H.

(Prereq. 63.12M)

A survey of the folk dances of Slavic, Baltic, and southern European countries. The course concentrates on performance skills, teaching skills, and appreciation.

63.12P Sports Leadership

2 Q.H.

The exploration of teaching techniques involving team, dual, and individual sports. Methods, such as the part-whole, or whole-part, are presented and investigated to establish relevance to each of the sport areas under study. Students are given the opportunity to develop skill in planning units and individual lessons. In addition students are expected to apply practical experience by teaching one lesson in each of the sports areas studied.

63.12Q Survey of Aquatics

2 Q.H.

Exploration of various aquatic events that may enhance recreational swimming programs. Students are given the opportunity to develop planning, execution, and evaluation techniques for each area of study. In addition, students may attend and evaluate a planned water event. Areas of study include party events for all ages, competitive swimming and diving, synchronized swimming, water polo, and events for the atypical.

63.12R Rhythm Activities and Bands

1 Q.H.

A study of musical sounds through rhythmic patterns, percussive instruments, such as cymbals, drums, xylophones, triangles, and other instruments; rhythmic games; songs and dances suitable for use in various recreational settings.

63.12T Photography

1 Q.H.*

A basic study including the history of photography; types of cameras; use of black and white and color films; use of F-stops and shutter

speeds; darkroom equipment; supplies and procedures. Field trips exploring photography techniques and darkroom experiences are included.

63.12U An Exploration of World Cultures

1 Q.H.

The study of diverse cultures throughout the world. Students investigate various cultural groups in terms of underlying beliefs and their reflection in customs, traditions, and life-styles.

63.12V Introduction to Organized Camping

1 Q.H.

A preliminary to practical experience at the Warren Center, the course offers an introduction to various types of organized camps, their program structures, length-of-camp seasons, and sessions. Primary objective is to develop a student-faculty-planned organized camp experience.

63.12W Organizing and Leading Wilderness

Trips

1 Q.H.*

Emphasis is on planning techniques and qualifications necessary to the excursion leader. Included are campcraft skills, menu planning, financing, purchasing supplies, scheduling, health and safety procedures, and types and use of equipment for backpacking trips.

63.12X Wilderness Camping

1 Q.H.*

A seven-day wilderness experience. Students spend two days in residence at the Warren Center, reviewing skills, preparing equipment, and packing supplies, and five days in the wilderness. The camping program includes canoeing, mountain climbing, nature study, overnight trips, and other field trips.

63.12Y Introduction to Winter Skills

1 Q.H.*

Course investigates several winter sports, their origins and history, current population demands, and future trends. Students are exposed to various types of equipment and their use as well as special health and safety considerations for winter sports. Sports to be studied include cross-country skiing, snow shoeing, skating, tobogganing, and snowmobiling.

63.12Z White Water Canoeing

2 Q.H.*

Course covers history of white water canoeing, differences in canoes, river ratings, and reading white water; safety considerations and review of skills. Course culminates in a one-week canoeing experience.

63.124 Camp Leadership

2 Q.H.

One-week resident camp experience at the Warren center. The student-faculty-planned program developed in 63.12V is implemented. Examples of course basis include natural science, basic sailing, and canoeing as well as campcraft skills, outdoor sports, and social recreation for special day and evening programs. Resident fee required.

63.126 Outdoor Education I

3 Q.H.

A practical orientation to outdoor education and

* Lab fee required.

recreation held at Warren Center, Blue Hills, Middlesex Fells, and other areas. Course emphasizes center on two areas of study: (1) basic animal and plant life in woodland and pond areas; and (2) techniques of reading the woods and utilizing natural materials.

63.127 Outdoor Education II 3 Q.H.
The exploration of outdoor education as it applies to schools, camps, and environmental center curricula. Students are given the opportunity to develop techniques for writing and teaching lessons as well as preparing a unit plan that relates outdoor education to elementary school curricula. In addition, students visit and observe outdoor education settings.

63.128 Survey of Recreation Facilities 3 Q.H.
Fundamental management and administration concepts for a wide variety of outdoor areas and facilities such as parks, beaches, ice rinks, marinas, camps, and community centers.

63.129 School Camping 3 Q.H.
Investigation of outdoor education as it applies to school, camp organization, administration, program planning, and educational significance. As part of the course each student is required to participate in a one-week supervised practical experience at a designated school camp.

63.136 Life/Career Planning 4 Q.H.
This course is designed to assist students in developing life/career planning skills for use in pursuit of a career in Recreation and Leisure Studies. A variety of careers, co-op job opportunities, and lifestyles of professionals in the field will be explored. Students will be given the opportunity to assess their own interests, values, needs, and skills and to develop job-finding skills, including resume writing and interviewing techniques.

63.137 Outdoor Practicum 3 Q.H.*
The out-of-doors is rapidly expanding as a vital force in education. The purpose of this course is to expose students to a variety of situations, introducing them to some of the most effective theories and methods currently used in education. It is a *practical* course, in that students spend a majority of time in the field. Different experiential methods are used to illustrate various educational objectives. These include adventure, challenge, high risk, and acclimatization, natural history interpretation, and a night experience. Two one-and-a-half-hour sessions are held at Boston-Bouve and five Friday sessions (8:30 a.m. - 2:30 p.m.) are held at the Hale Reservation. A final project is required from each student.

63.140 Basic Sailing 2 Q.H.
Instruction leading to an opportunity to qualify for Red Cross Basic Certification in Sailing. Classes are held at Warren Center and include theory and practical experiences.

63.141 Basic Canoeing 2 Q.H.
Instruction leading to an opportunity to qualify for Red Cross Basic Canoeing Certification. Classes are held at Warren Center and include theory and practical experience.

63.142 Water Safety Instructor 2 Q.H.
Instruction, skill development, and teaching techniques leading to an opportunity to qualify for Red Cross Water Safety Instructor Certification. Students must pass written and practical exams to be certified.

63.144 Tripping and Orienteering 2 Q.H.
Practical experience in the art of orienteering, including its uses in camping, backpacking, and resident camping. Course is held at the Warren Center and includes overnight excursions. Fee charged.

63.145 Winter Sports 2 Q.H.*
Five-day resident session. Daily instruction in Alpine and cross-country skiing. Includes predeparture seminars. Separate fees are charged for room, board, transportation, lifts, lessons, and equipment rental.

63.146 Camp Administration 3 Q.H.
Investigation of camp management guidelines including site development, health and safety, hiring and staff training, public relations, American Camping Association standards, legal regulations, organization within camps, programs, and other selected administrative aspects.

63.147 Outdoor Education for the Handicapped 3 Q.H.
Program planning; methods of conducting programs relating to adaptation of facilities and activities necessary for the physically and mentally disabled, including observations, participation, and direct laboratory experience.

63.148 Introduction to Outdoor Recreation/ Education 3 Q.H.
A broad view of outdoor recreation/education that focuses upon the types of experiences and opportunities available to students interested in this track of recreation. The course explores four general areas that the outdoor student might focus upon in pursuit of a professional career. Areas of study include educational, commercial, management, and outdoor specialist opportunities.

63.149 Outdoor Recreation Planning 3 Q.H.
Supply and demand aspects of recreation are studied at national, state, and local levels. Class project is to develop a comprehensive recreation plan for a city or town conforming to federal and state requirements.

63.152 Analysis of Movement as Applied to Recreation 4 Q.H.
A kinesiological approach to movement in general and its application to recreation ac-

*Lab fee required.

tivities in particular. Includes review of muscle location, muscle attachments, and actions. This gives the prospective recreation therapist the opportunity to develop and choose the most suitable activities for improving the performance of individuals with physical disabilities.

63.153 Social and Psychological Impacts of Disabilities

4 Q.H.

An interdisciplinary approach to social and psychological understanding of the impact of disabilities and handicaps, giving the recreation therapist an opportunity to evaluate and understand behavioral changes in the handicapped population.

63.154 Basic Rockclimbing and Rappelling

2 Q.H.*

A training program designed to introduce potential rockclimbing leaders to all necessary facets of the sport. While successful completion of the program does not qualify a student to lead rockclimbing trips, it may help students gain a better perspective on both the necessary skills and the leadership role in rockcraft. The program consists of a weekend of practical experience based at Cooks Canyon Wildlife Sanctuary in Barre, Mass., and two introductory discussion sessions at Bouve. Program areas include activities and information regarding basic climbing and rappelling experience, knots, safety, belaying, equipment usage and care, and leadership. The lab fee includes lodging, meals, equipment use, and instruction.

63.210 Philosophy of Recreation and Leisure

3 Q.H.

A study of the history, theories, concepts, and attitudes of play, recreation, and leisure. An opportunity to develop a personal philosophy. Viewpoints and input from other fields are studied as they apply to recreation and leisure activities.

63.212 Leisure Counseling

4 Q.H.

This course is designed to provide students an opportunity to develop fundamental group counseling skills through the use of specialized strategies and traditional verbal counseling techniques. Major focus is on lifestyle awareness counseling.

63.216 Seminar on Issues and Legislation in Outdoor Recreation/Education

3 Q.H.

Investigation of nonfiction writing, public relations methods, and media agencies that have had an impact on recent issues in outdoor recreation/education. The course relates each of these areas to federal and state legislation implemented within the past ten years. Course will include discussion and exposure to procedures for proposing legislation, lobbying, and political pressure techniques.

63.220 Methods and Materials in Recreation

3 Q.H.

Program planning in recreation includes the study of the physical, social, and emotional characteristics and needs of all age groups and the most appropriate recreational programs that meet the needs of these individuals and groups. Also included are systems approaches to recreation planning, activity analysis, and various teaching and publicity techniques. The role of leadership in developing and operating programs is discussed.

63.249 Process of Aging

3 Q.H.

The study of phases of aging. Discussion of the physical, social, and emotional changes or problems which face the aged. The study of types of services offered to senior citizens; sources of funds allocated to sponsor such services. The role of recreation is emphasized.

63.250 Group Dynamics

3 Q.H.

The study of human behavior in groups is approached through lectures, reading, and structural group experiences. Major areas of concentration include communication, leadership, decision making, and evaluation of the group process.

63.255 Introduction to Therapeutic Recreation

3 Q.H.

The rationale for therapeutic recreation; its role in rehabilitation and community settings. An orientation to various disabilities and their individual and societal impacts, with focus on the needs, interests, abilities, and limitations of handicapped persons.

63.256 Programming for Special Populations

3 Q.H.

An advanced course in planning therapeutic recreation programs to meet individual and group needs, focusing on systems approaches to program planning. Other considerations include study of the functional elements of activities, current legislation, and the psychological structure of leisure.

63.257 Workshop Design

3 Q.H.

Supervised practical experience in developing, implementing, and evaluating a workshop.

63.260 Administration of Recreation and Parks

4 Q.H.

Administration procedures of tax-supported recreation and park operations. Concentration on legality commissions, area and facility design, personnel policies and problem solving related to administration and management.

63.262 Budgeting Systems

3 Q.H.

Systematic approaches to budgeting are studied and applied to allocation decisions in recreation agencies. Case studies will involve the following concepts: program budgeting, zero-based budgeting, measuring efficiency, full-cost pricing, capital budgeting, and cost-effectiveness analysis.

*Lab fee required.

63.263 Introduction to Community Recreation

3 Q.H.

An overview of community recreation that focuses upon varied types of programs, i.e., agency, YMCA, municipal, and private athletic club. Other subject areas to be included are career opportunities, position levels, and contemporary trends in the field of community recreation.

63.264 Program Evaluation in Recreation

4 Q.H.

Comprehensive systems for evaluating program effectiveness as they relate to the consumer of recreation services. Major emphasis placed on developing an evaluation system for an agency of the student's choice. Case studies are drawn from the public, nonprofit, and commercial sectors.

63.266 Recreation and Community Schools

3 Q.H.

The place of the school in community recreation. Special emphasis on the schools' 12-month program to meet the needs of all ages. Field programs dealing with the community school concept.

63.268 Urban Recreation

4 Q.H.

An examination of the different cultural and sociological patterns of various ethnic groups who live in an urban setting. Various recreational activities are suggested for each group. Other pertinent recreational issues common to the urban community are studied.

63.280 Supervised Field Experience and Teaching

16 Q.H.

Professional assignment in recreation setting, i.e., industry, school, hospital, recreation center or agency, organization, housing settlement, park playground, or camp; supervision and conferences; seminar. Ten-week internship.

63.285 Introduction to Research

4 Q.H.

A study of empirical research procedures, including planning the study, sampling, designing instrumentation, gathering and analyzing data, and using statistical techniques. Students write a research proposal, simulate response data, and analyze such data through use of computer-based statistical packages.

63.290 Research Seminar

4 Q.H.

(Preq. 63.285)

Students are given an opportunity to design and carry out individual or collaborative research projects under close faculty supervision. Each student is encouraged to use the proposal developed in 63.285 (Introduction to Research) as a basis for such a project. A written report of research findings is required.

63.291, 63.292, 63.293, 63.294 Independent Study

Under the guidance and direction of a program adviser, students are given the opportunity to conduct projects related to their professional interests. Credit of one, two, three, or four quarter-hours.

Physical Therapy

64.114 Introduction to Physical Therapy

2 Q.H.

Orientation to the field of physical therapy and its role in the health professions; theory and practice in applied body mechanics and basic procedures related to patient management.

64.115 Introduction to Physical Therapy

2 Q.H.

(Preq. 10.105, 11.171, 11.173, 12.107, 18.143, and 18.142)

Practice in the preparation of patients and equipment for various treatment procedures. Theory demonstration and practice in heat, light, and hydrotherapy.

64.123 Clinical Gross Anatomy

6 Q.H.**

(Preq. 18.144, 18.148)

The structure and function of the human body with particular emphasis on the skeletal, muscular, nervous, and cardiovascular systems. Clinical applications. Lecture and laboratory.

64.125 Physiology for Physical Therapists

3 Q.H.

(Preq. 18.144, 18.148, 64.115)

Neuromuscular, cardiovascular, and respiratory physiology applied to physical therapy.

64.130 Clinical Kinesiology

4 Q.H.**

(Preq. 64.123, 64.125)

Musculoskeletal function with emphasis on the mechanical and physiological factors involved. Clinical applications to normal and pathological movements.

64.141 Physical Therapy I

2 Q.H.

(Preq. 18.148, 64.115, 18.144)

Theory, demonstration, and practice in massage.

64.142 Physical Therapy II

3 Q.H.

(Preq. 64.123, 64.125, 64.234)

Evaluation procedures: theory, demonstration, practice, and planning.

64.143 Physical Therapy III

4 Q.H.

(Preq. 64.123, 64.125, 64.141, 64.234)

Basic therapeutic exercise: theory, demonstration, practice, and planning.

64.147 Physical Therapy V

3 Q.H.**

(Preq. 64.130, 64.142, 64.143, 64.229)

Theory, demonstration, and practice of facilitation approaches (proprioceptive neuromuscular facilitation, Brunnstrom, Bobath, Rood). Historical development of the above approaches. Introduction to approaches of Phelps, Fay, and Doman-Delacato.

- 64.148 Physical Therapy V (Con't.)** 1 Q.H.
(Prereq. 64.130, 64.142, 64.143, 64.229)
- 64.149 Clinical Seminar** 2 Q.H.
(Prereq. 64.156, 64.234)
Selected topics related to clinical aspects in physical therapy. Interpersonal relationships, ethics, and teaching methods.
- 64.156 Physical Therapy IV** 3 Q.H.
(Prereq. 64.130, 64.142, 64.143, 64.229)
Theory, demonstration and practice in prosthetics, orthotics, and functional activities.
- 64.167 Research for Physical Therapy** 4 Q.H.*
(Prereq. Satisfactory attainment in all prior professional courses)
Introduction to research design, analysis of scientific and medical literature, and preparation of an independent research proposal; electromyography.
- 64.169 Physical Therapy VII** 2 Q.H.
(Prereq. 64.142, 64.147, 64.229, 64.251)
Theory, demonstration, and practice in electrical testing and treatment procedures.
- 64.171 Physical Therapy VI** 2 Q.H.*
(Prereq. 64.130, 64.142, 64.143)
Respiratory physical therapy: theory, demonstration, and practice in the management of medical and surgical chest conditions. Introduction to respiratory mechanical equipment and cardiopulmonary resuscitation.
- 64.173 Physical Therapy in the Health Care System** 3 Q.H.
(Prereq. 64.149, 64.184)
Concepts of rehabilitation and community health. Emphasis on the role of the physical therapist as a member of the health team. Class discussion and seminar.
- 64.176 Administration** 3 Q.H.
(Prereq. 64.184)
Concepts in administration and management applied to physical therapy.
- 64.178 Physical Therapy VIII** 2 Q.H.*
(Prereq. Satisfactory attainment in all prior professional courses)
Analysis and comparison of methods of physical therapy evaluation and treatment, with special emphasis on therapeutic exercise. Treatment planning for various problems, with emphasis on rationale and selection of treatment alternatives.
- 64.182 Psychosocial Aspects of Illness** 3 Q.H.
(Prereq. 64.149, 64.184)
Interpersonal relation between patient, family, therapists, and society, with reference to the impact and reactions to illness.
- 64.184 Supervised Clinical Education I** 5 Q.H.
(Prereq. Satisfactory attainment in all prior professional courses)
An introduction to clinical experience providing the student with opportunities to practice various skills in the evaluation and treatment of patients under supervision. Emphasis is placed on an understanding of treatment planning. Five weeks during Quarter 9 of the junior year in the Boston area.
- 64.194 Supervised Clinical Education II**
(Prereq. Satisfactory attainment in all prior professional courses)
Advanced clinical education providing the student with further opportunities to practice various phases of physical therapy under supervision in preparation for assuming the role of a qualified physical therapist. Assignments in Massachusetts and other states. Twelve weeks during senior year.
Required for graduation from the physical therapy program.
- 64.210 Pathology** 3 Q.H.
(Prereq. 18.144, 18.148)
Lectures and slide presentations of pathological specimens. Inflammation, repair, metabolism and circulation; disorders of growth, including tumors.
- 64.227 Clinical Medicine I** 2 Q.H.
(Prereq. 18.144)
Pediatric and laboratory medicine.
- 64.229 Clinical Medicine II** 3 Q.H.
(Prereq. 64.123, 64.125)
Orthopedic conditions and their medical, surgical, and physical therapy treatment.
- 64.230 Clinical Medicine III** 3 Q.H.
(Prereq. 64.210, 64.227, 64.251)
Lectures covering various areas of medicine and neurology related to conditions commonly encountered in patients treated by physical therapists.
- 64.234 Clinical Psychiatry** 2 Q.H.
(Prereq. 19.106)
Review of psychiatric categories, including consideration of etiology and treatment. Psychosocial variables significant in the management of patients with whom the physical therapist is concerned.
- 64.239 Investigative Studies** 6 Q.H.
(Prereq. Satisfactory attainment in all prior professional courses)
Selected seminars related to current issues and trends in physical therapy; research projects.
- 64.251 Neuroanatomy** 4 Q.H.*
(Prereq. 64.143)
Morphology and function of the human nervous system. Abnormalities of structure and function of the nervous system. Lecture and laboratory.

* Lab fee required.

School and Community Health Education

65.110 Foundations of Health Education 2 Q.H.
Provides opportunities for learners to investigate the broad spectrum of career possibilities in Community and School Health Education and to ascertain their potential roles in the field. Philosophy of health education, the conceptual approach, and trends in health education are considered.

65.114 Mental Health 4 Q.H.
An investigation of mental illness and well-being as they relate to total health, with concern for the factors that influence mental and emotional behavior. Various approaches to mental health education in school programs included.

65.116 Nutrition 4 Q.H.
(Prereq. 12.102, majors only)
This course offers the student the opportunity to learn and evaluate nutrition information both as a future educator and as a consumer. The chemical, biological, and physiological basis of nutrition are explained.

65.117 Public Health 4 Q.H.
History and overview of public health agencies and the organization of services for meeting community health needs at the local, state, federal, and international levels. Focus on today's major health problems.

65.118 Drug Use and Abuse 4 Q.H.
The use, misuse, and abuse of drugs in our society, including prescription and nonprescription drugs, alcohol, caffeine, and nicotine are stressed. Physiological, psychological, and sociological effects on humans are considered. A rational perspective from which to explore the relationships among history, prevailing attitudes, environmental differences, and drug-taking behavior is presented.

65.129 Health Education 3 Q.H.
Principles of personal health; emphasis on information pertinent to mental and physical well-being, current social behavior, and effective approaches to college living.

65.130 Health Concerns of the College Student (Prereq. Physical Education majors only) 3 Q.H.
Discussion of the major health problems affecting college students. Principles of personal health, with emphasis on healthful college living.

65.131 Current Issues in Health 4 Q.H.
Focus on personal health issues; topics may include mental health, human sexuality and reproduction, drug use and abuse, nutrition, communicable and chronic diseases, consumer health and environmental concerns. Emphasis is placed on issues of concern to the participants.

65.140 Longevity and Aging 4 Q.H.
Study of the biological, psychological, and sociological aspects of human aging. Considera-

tion is given to the importance of one's current lifestyle, in relation to the phenomenon of longevity and the quality of life.

65.160 Instructional Resources 2 Q.H.
Introduction to the use of audiovisual media as educational tools. Production of slide presentations, transparencies, bulletin boards, displays, etc. Opportunities provided for experiences in operating selected equipment.

65.191 Independent Study I 1 Q.H.

65.192 Independent Study II 2 Q.H.

65.193 Independent Study III 3 Q.H.

65.194 Independent Study IV 4 Q.H.
Designed to provide the student with an opportunity for concentrated planning and research. In-depth study may be carried out in a topic area of health education. Outline of proposed study must be submitted for departmental approval.

65.208 First Aid 2 Q.H.
Instructs students in principles of first aid and skill competencies necessary to care for selected injuries and to meet certain emergencies. Successful completion of the course leads to certification in first aid by the American Red Cross.

65.209 Introduction to Safety 2 Q.H.
(Prereq. 65.110)
Introduces the principles and fundamentals of safety education as they relate to people in their environment. Concerns safety as a social problem; considers major accident areas, accident causes, and liability; and analyzes possible solutions to accident problems.

65.217 Teaching Procedures/Curriculum in Health Education in School and Community 4 Q.H.

The prospective health educator is introduced to health education curriculum, techniques of planning, and pertinent methods and materials in school and community health education.

65.218 Public Health 3 Q.H.
(Pharmacy majors only)
Principles of public health, with particular emphasis on the emerging patterns of community organization, and activities in the public health field.

65.219 Evolving Patterns of Community Health Education 4 Q.H.
Principles of community health, with emphasis on contemporary local, national, and international organizations for meeting health problems; health-care delivery, consumer health issues, environmental health, community resources, and the role of health education in the community.

65.220 Community Health

4 Q.H.

Focus on today's major community health problems, with an overview of the organization of services for meeting community health needs at the local, state, federal, and international levels.

65.222 Drug Use and Abuse

4 Q.H.

The use, misuse, and abuse of drugs in our society, including prescription and nonprescription drugs, alcohol, caffeine, and nicotine, and the physiological, psychological and sociological effects on humans, are considered. A rational perspective from which to explore the interrelationships among history, prevailing attitudes, environmental differences, and drug-taking behavior is presented. Various approaches to drug education in school/community programs are discussed.

65.223 Human Sexuality and the Family

4 Q.H.

(Prereq. 50.131)

Physical, psychological, social, historical, semantic, and comparative cultural aspects of human sexuality; needs and problems at several stages of maturation, including various approaches to sex education in the school.

65.225 Communicable and Degenerative Diseases

4 Q.H.

The disease immunity process, with emphasis on prevalent communicable diseases in the United States today and their transmission; chronic diseases; cardiovascular diseases; cancer, diabetes, and other constitutional and degenerative diseases and disorders which affect the nation's health. Predominant themes are personal health attitudes and behaviors. Personal health responsibility is analyzed.

65.233 Organization and Administration of School and Community Health Education

4 Q.H.

Principles and methods of organization and administration of school and community health education programs; ethics, personnel, budget, facility management, and priorities.

65.234 Health Problems of Youth

4 Q.H.

Application of health concepts to assist youth in reaching a higher level of wellness through preventive measures. Significant physical, mental/emotional, and social health problems are identified so that they may be intelligently dealt with by health professionals, teachers, and adults concerned about youth.

65.235 Health Counseling

4 Q.H.

The identification of physical, mental, emotional, and social health problems; remedial procedures; and counseling techniques, to aid health educators to deal more intelligently with various health problems.

65.238, 65.239 Seminar

(each) 2 Q.H.

(Prereq. for 65.238 is 50.141)

(Prereq. for 65.239 is 65.238)

Discussion of current problems and new developments as they relate to health education in school and a variety of community settings. An introduction to research and scientific writing, culminating in a research project in an area of special interest.

65.240 Student Teaching

12 Q.H.

(Prereq. 65.217)

Observation and practical teaching experience in public school health education programs. Supervision and evaluation by personnel in cooperating schools and by Boston-Bouve College faculty; seminars.

65.241 Field Experience

12 Q.H.

(Prereq. 65.217)

Observation and practical field experience in selected community health education settings. Supervision and evaluation by personnel in cooperating agencies and by Boston-Bouve College faculty; seminars.

Pharmacy

71.193 Special Research Project (Pharmacy Administration)

4 Q.H.

(Prereq. Permission of instructor with dean's approval)

A course of directed study or research in one of the pharmaceutical sciences, wherein the student may undertake in-depth investigation of an area of specialized interest.

71.194 Special Research Project (Pharmacy Administration)

4 Q.H.

(Prereq. Permission of instructor with dean's approval)

A course of directed study or research in one of the pharmaceutical sciences, wherein the student may undertake in-depth investigation of an area of specialized interest.

71.195 Special Research Project (Pharmacy Administration)

4 Q.H.

(Prereq. Permission of instructor with dean's approval)

A course of directed study or research in one of the pharmaceutical sciences wherein the student may undertake in-depth investigation of an area of specialized interest.

71.213 Selected Topics in Clinical Pharmacy I

4 Q.H.

(Prereq. 73.245, 72.270, 73.230, permission of instructors)

Designed to help students increase their understanding of selected diseases. Pathophysiology and diagnosis of the illness, as well as drug therapy and its interrelationship to patient compliance and education. Provides

greater depth than existing clinical pharmacy courses.

71.214 Selected Topics in Clinical Pharmacy II

(Prereq. Pharmacology sequence, 4 Q.H.
73.245 through 73.230, or permission of instructor)

Exposes students to another group of selected diseases not discussed in 71.213. Provides greater depth than existing clinical pharmacy courses.

71.215 Clinical Pharmacokinetics 4 Q.H.

(Prereq. 71.264 Biopharmaceutics/
Pharmacokinetics or equiv.)

Application of various pharmacokinetic techniques in estimating dosage regimens, evaluating drug therapy, consulting on drug selection, and assessing bioavailability and bioequivalence data.

71.216 Clinical Nuclear Pharmacy 4 Q.H.*

(Prereq. 72.251 Radiopharmaceutics, fifth-year standing, or permission of instructor)

The course provides students with an opportunity to acquire in-depth information and hands-on experience in such areas of clinical nuclear pharmacy as radiopharmaceutical kit formulation and tissue distribution. Concepts and ideas fostered in the initial nuclear pharmacy course (72.271) are applied specifically to the clinical. In addition, unique analytical methods such as neutron activation analysis and autoradiography not usually present in fundamental courses are discussed. Finally, students are afforded the opportunity to present clinical case studies involving nuclear medicine procedures.

71.217 Clinical Aspects of Infectious Disease

(Prereq. Fifth-year Pharmacy students 4 Q.H.
upon completion of the Pharmacology sequence.)

This course provides the student with practical information concerning the common infectious diseases and the antimicrobial agents used to treat them. In addition, specific dosing parameters, techniques, and aids will be discussed, permitting treatment assessment. Visual aids will be used to enhance student learning.

71.222 Pharmacy Technology 4 Q.H.*

(Prereq. 71.263)

The industrial pharmacy development of new, oral, liquid pharmaceutical preparations; as well as emulsions, ointments, and aerosols.

71.243 Pharmaceutical Jurisprudence 4 Q.H.

A comprehensive analysis and interpretation of laws relating to the practice of pharmacy. Federal and state food and drug laws, narcotics laws, Medicare and Medicaid regulations, and state pharmacy laws are discussed.

71.245 Pharmacy Administration I 4 Q.H.

Socioeconomic aspects of pharmacy: the government's relationship to the pharmaceutical

industry, trends in contemporary practice, third-party payment plans, macroeconomic impact on the industry, and the interaction of current concepts in pharmacy.

71.251 Clinical Pharmacy

3 Q.H.

(Prereq. 72.270)

Initial course in clinical pharmacy. Gathering and evaluating medication data of patients, interpreting clinical laboratory data, and studying potential drug interactions of clinical significance.

71.254 Clinical Pharmacy

14 Q.H.*

(Prereq. 71.251 Clinical Pharmacy or equiv.)

Observing patient response to medication and evaluating and advising on all factors which may modify efficacy, safety, and economy of therapy. Lectures are devoted to case-study evaluations and reports. Laboratory consists of five days of medical rounds in the hospitals as well as case-discussion orientation in various medical specialties.

71.259 Basic Pharmacy (replaces 71.260)

An introduction to the general scope of pharmacy, including calculations, basic tools, and equipment used in the practice of pharmacy. The student is also introduced to various drug products, parapharmaceuticals, and medical terminology.

71.261 Physical Pharmacy

4 Q.H.

(Prereq. 12.145 Org. Chem. and 11.175 Basic Physics)

The study of physicochemical theories and principles and their application to pharmaceutical systems: intermolecular forces of the various states of matter, solubility phenomena, equilibria, complexation, micromeritics, micro- and macromolecular systems, rheology, stability, and chemical kinetics.

71.262 Pharmaceutics I

4 Q.H.*

(Prereq. 71.261 Physical Pharmacy)

The application of fundamental principles to the formulation of pharmaceutical preparations. Major emphasis is on pharmaceutical dosage forms, including both industrial formulation and extemporaneous compounding.

71.263 Pharmaceutics II

4 Q.H.*

(Prereq. 71.262 Pharmaceutics I)

A continuation of Pharmaceutics I.

71.264 Biopharmaceutics/Pharmacokinetics

4 Q.H.

(Prereq. 71.263 Pharmaceutics II, 93.151 Biochemistry, and 73.204 Physiology)

Introduction to biopharmaceutics and pharmacokinetics. Emphasis on the kinetics of drug absorption, distribution metabolism, and excretion in respect to dosage forms, drug interactions, and therapeutic response. Mathematical models for these processes are developed and applied to bioavailability data and the evaluation of drug therapy.

71.283 Professional Practice I 4 Q.H.
(Prereq. 71.264)

Correlates previous pharmacy courses. Emphasis is placed on chemical incompatibilities.

71.284 Professional Practice I Laboratory 1 Q.H.*
(Prereq. 71.264)

Compounding and dispensing solid and liquid medication. Emphasis is placed on the correlation of Professional Practice I lecture material. Prescription practice also involves proprietary medications.

71.286 Professional Practice II Laboratory 1 Q.H.*
(Prereq. 71.283)

Prescription practice is continued with emphasis on specialties and possible drug interactions.

71.288 Professional Practice II 4 Q.H.
(Prereq. 71.264 Pharmacy IV)

Designed to provide an overall view of "over-the-counter" medications. The directions and precautions for proper use of these preparations are discussed.

71.290 Hospital Pharmacy I 4 Q.H.
The relationship of the pharmacy to the total hospital structure. Designing the physical plant, staffing, personnel management, and the law of institutional practice.

71.291 Hospital Pharmacy II 4 Q.H.
(Prereq. 71.290)

An in-depth analysis of various concepts relating to hospital pharmacy. The course includes comprehensive treatment of topics by other health professionals at their respective institutions.

71.292 Seminar in Community Pharmacy Management 4 Q.H.

A discussion course on all phases of community pharmacy operations with extensive utilization of the case method of instruction.

71.293 Pharmaceuticals Special Research Project 4 Q.H.
(Prereq. permission of instructor(s) with dean's approval)

A course of directed study or research in one of the pharmaceutical sciences, wherein the student may undertake in-depth investigation of an area of specialized interest.

71.294 Pharmaceuticals Special Research Project 4 Q.H.
(Prereq. permission of instructor(s) with dean's approval)

A course of directed study or research in one of the pharmaceutical sciences, wherein the student may undertake in-depth investigation of an area of specialized interest.

71.295 Pharmaceuticals Special Research Project 4 Q.H.
(Prereq. permission of instructor(s) with dean's approval)

A course of directed study or research in one of the pharmaceutical sciences, wherein the student may undertake in-depth investigation of an area of specialized interest.

71.296 Community Pharmacy Management 4 Q.H.

The management requirements for establishing a community pharmacy. A comparative analysis of the prevailing types of organizations, locations, leases, and business organization, staffing, plant layout and design, and financial factors.

71.297 Principles of Management 4 Q.H.

The fundamentals of business organization with emphasis on the qualitative and legal aspects of management. This course shall include an analysis of the marketing structure of the drug trade, forces of organizations, personnel management, and decision-making theory using nonqualitative data.

71.298 Financial Management 4 Q.H.

The fundamentals of accounting and finance with emphasis on their application to retailing and community pharmacy management. Accounting systems, analysis of financial statements, budgets, cash flow, taxation, and finance are covered in depth.

72.230 Drug Analysis 5 Q.H.*

A survey of the quantitative analytical techniques applicable to the evaluation and assay of natural and synthetic drugs and their formulations; emphasis on chromatographic, spectroscopic, and other instrumental methods, with selected laboratory experiments in the use of these as defined in official compendia.

72.253 Medicines Out of the Earth 4 Q.H.
(Prereq. 12.144, 12.145, 18.131, 18.132)

The historical use of plants as drugs and their role in the development of modern medicinal and pharmaceutical preparations. Introduction to a variety of modern approaches to the discovery of new drugs, with reference to current research programs employing them. Films, slides, and demonstrations illustrate the techniques involved.

72.255 Cardiovascular Drugs 4 Q.H.
(Prereq. 72.270, 72.271 Med. Chem. Pharm. I & II and Organic Chem. [Undergrad.])

Exposes students to current ideas and developments in the area of cardiovascular drug research. Graduate-level lectures emphasize the latest concepts regarding the etiology and pathophysiology of cardiovascular disorders and the proposed mechanisms of drug action. Operating in a discussion format, this two-hour undergraduate session emphasizes pharmaceutical aspects relevant to lecture presentations, as well as evaluations of the current research literature.

72.260 Basics of Nuclear Pharmacy 4 Q.H.
This course comprises the study of the physics, chemistry, and pharmaceutical use of radiopharmaceuticals. Methods for preparing and handling these drugs will be discussed in a practical

*Lab fee required.

way, as well as the rationale for their use in diagnosis and therapy.

72.261 Identification of Abuse Drugs 4 Q.H.*
(Prereq. 12.171, 72.230, or equiv.)

An introduction to the chemistry, biological action, and methods of detection and assay of commonly abused drugs.

72.270 Medicinal Chemistry/Pharmacology I
(Prereq. 18.132 General Biology and 5 Q.H.
12.145 Organic Chemistry)

An introduction to the principles of pharmacognosy, pharmacology, and medicinal chemistry applied to the discovery of drugs of therapeutic utility to man; a detailed discussion of drugs affecting the central nervous system.

72.271 Medicinal Chemistry/Pharmacology II
(Prereq. 72.270 Medicinal Chemistry/ 5 Q.H.
Pharmacology I)

Continuation of 72.270. An interdisciplinary approach to the fundamental chemical and pharmacological principles of drug action. A discussion of structure-activity relationship, absorption characteristics, metabolic rate, pharmacodynamics, and therapeutic application of those drugs which act at sympathetic and neuroeffector junctional sites.

72.272 Medicinal Chemistry/Pharmacology III
(Prereq. 72.271) 5 Q.H.

A continuation of 72.271 with special emphasis on drugs affecting the hematopoietic systems, the kidneys, and the endocrine and reproductive systems.

72.273 Medicinal Chemistry/Pharmacology IV
(Prereq. 72.272) 5 Q.H.

A continuation of 72.272 with special emphasis on antineoplastic and other chemotherapeutic agents, biologicals, and vitamins.

72.293 Special Research Project (Medicinal Chemistry) 4 Q.H.

(Prereq. Permission of instructor with dean's approval)

Directed study or research in one of the pharmaceutical sciences. Students may undertake in-depth investigation of an area of specialized interest.

72.294 Special Research Project (Medicinal Chemistry) 4 Q.H.

(Prereq. Permission of instructor with dean's approval)

Directed study or research in one of the pharmaceutical sciences. Students may undertake in-depth investigation of an area of specialized interest.

72.295 Special Research Project (Medicinal Chemistry) 4 Q.H.

(Prereq. Permission of instructor with dean's approval)

Directed study or research in one of the pharmaceutical sciences. Students may undertake

in-depth investigation of an area of specialized interest.

73.111 Drugs—Their Uses and Actions 4 Q.H.
Background, classification, dose responses, untoward side effects, uses, and commercial preparations of a broad series of drugs. (Not open to Pharmacy majors.)

73.114 Basic Pharmacology 3 Q.H.
(Prereq. 12.107, 86.140, 86.141, 86.136, 86.137, 86.138, 86.139, or consent of instructor)

Designed to present the classification, uses, and commercial preparation of a wide variety of drugs of social, therapeutic, and diagnostic significance. The course contents comprise an introduction to pharmacology, hematologic drugs, vitamins and nutritional agents, neurotropic drugs, analgesics, cardiotropic agents, anesthetic agents, antibiotics, and hormones.

73.116 Pharmacodynamics 3 Q.H.
(Prereq. 18.148, 18.125, 18.120, 12.106, and 12.107)

Introductory expositions of pharmacologic principles, with the pharmacotherapeutics of drug groups and individual drug substances of particular importance in treatment and diagnosis of disease.

73.117 Pharmacology for the Respiratory Care Practitioner 4 Q.H.

An orientation to pharmacology, including the scope of pharmacology definitions, drug standards, and drug legislation, and names, sources, active constituents, and pharmaceutical preparations of drugs relating to the respiratory-care practitioner.

73.118 Poisons 4 Q.H.
(Prereq. Non-Pharmacy majors)

This course will present an organized classification of chemicals (natural and synthetic) capable of potential harm to man and his environment. Included will be the effects, uses, treatments, and designs of poisons.

73.202 Anatomy-Physiology 5 Q.H.*
(Prereq. 12.107 Gen. Chemistry and 18.132 Animal Biology)

Structure and function of cells, tissues and organs, including the muscular and endocrine systems. The laboratory includes human skeletal anatomy and cat dissection. Both the lecture and laboratory sections of this course are oriented to students in the health professions.

73.204 Anatomy-Physiology 5 Q.H.*

Structure and function of the various life-supportive systems not covered in the first quarter. The study of the endocrine and reproductive systems concludes the course. Laboratory is devoted to basic principles involved in understanding life systems and cell function.

- 73.215 Drug Interactions** 4 Q.H.
(Prereq. Chemistry/Pharmacology III)
Drug interactions will be considered by pharmacological class. Included in the discussions will be antihistamines, antibiotics, other anti-infective agents, anti-neoplastics, parasympathomimetic and parasympatholytic agents, skeletal muscle relaxants, coumarin anti-coagulants, and cardiovascular agents. Included also will be some discussions of the effects of hormone therapy or action of other drugs and some consideration of physiological states (physical debilitation, pregnancy) which can alter drug response.
- 73.223 Clinical Biochemistry** 4 Q.H.*
(Prereq. 90.151)
Electrolytes, enzymes, and hormones of clinical and pathologic interest, with experiments to interpret disordered biochemistry.
- 73.229 Pharmacology Lab I** 1 Q.H.*
Application and basic principles demonstrating the pharmacological considerations of drug actions in biological systems.
- 73.230 Pharmacology Lab II** 1 Q.H.*
(Prereq. 73.229)
A continuation of 73.229.
- 73.245 Introduction to Pathology** 4 Q.H.
(Prereq. 72.204, 73.223)
Basic concepts of pathology for the pharmacy student, with emphasis on disease processes and alterations of normal biochemical mechanisms.
- 73.247 Toxicology** 4 Q.H.
(Prereq. 72.270)
Principles of toxicology, including FDA requirements relating to new drugs, environmental and other factors affecting the toxicity of therapeutic agents, mechanisms of toxicity, and clinical applications.

- 73.248 Neuropharmacology** 3 Q.H.
(Prereq. 72.272)
Neurohumoral control of normal body function and the effects exerted on these systems by neurotropic agents.
- 73.293 Special Research Project/Pharmacology** 4 Q.H.
(Prereq. Permission of instructor with dean's approval)
A course of directed study or research in one of the pharmaceutical sciences, wherein the student may undertake in-depth investigation of an area of specialized interest.
- 73.294 Special Research Project (Pharmacology)** 4 Q.H.
(Prereq. Permission of instructor with dean's approval)
A course of directed study or research in one of the pharmaceutical sciences, wherein the student may undertake in-depth investigation of an area of specialized interest.
- 73.295 Special Research Project (Pharmacology)** 4 Q.H.
(Prereq. Permission of instructor with dean's approval)
A course of directed study or research in one of the pharmaceutical sciences, wherein the student may undertake in-depth investigation of an area of specialized interest.

Nursing

- 80.108 Transitional Nursing I** 5 Q.H.*
The student has the opportunity to apply the nursing process to develop, implement, and evaluate effective plans to provide direct health care. Care planning will be based upon principles from the biophysical and psychosocial sciences with broad application to nursing problems.
- 80.110 Nursing Seminar** 3 Q.H.
The student is provided the opportunity to apply the scientific approach to the analysis of health problems and related medical and nursing therapy. Results of independent research are presented in class. A scholarly written report is also required.
- 80.111 Trends in Nursing** 1 Q.H.
The evolution of nursing as a profession and its role in contemporary society are discussed. Study focuses on events which influence nursing practice today and potential medical advances of the future. Emphasis is placed on educational preparation for nursing responsibilities inherent in the nursing role.
- 80.201 Nursing** 3 Q.H.*
Introduces the student to modern concepts of health, communication and interviewing techniques, group processes, and problem-solving processes.
- 80.202 Nursing** 3 Q.H.*
Introduces the student to the systems of health-care delivery, role of professional nursing, and

regional and world health problems. The student is expected to serve as group discussion leader at least once during the quarter.

80.203 Nursing 3 Q.H.*

The science of nutrition may assist the student in recognizing factors influencing the formation of our food habits; identifying functions of major nutrients, food sources of those nutrients, and normal nutrient needs according to age groups; exploring health-food fads and vegetarian diets; and recognizing the need for objectivity in working with individuals in meeting their needs as well as the importance of nutrition and its relationship to health.

80.204 Nursing—Universal Needs 5 Q.H.*

(Prereq. 80.201, 80.202, 80.203, 12.106, 12.107, 18.141, 18.142, and 18.148)

Basic nursing theory and application in caring for people in hospital settings. Selected universal needs serve as the basis for the course, which focuses on the nursing process as it relates to meeting these needs.

80.205 Nursing—Common Problems I 5 Q.H.*

(Prereq. 80.204, 18.143, 18.120)

Exploring problems common to individuals who are unable to meet their own health needs. Clinical practice introduces skills and activities to meet the needs of patients with these common problems in general hospital settings.

80.207 Nursing—Common Problems II 7 Q.H.*

(Prereq. 80.205, 18.144, 19.105, 19.106)

Physiological and psychological disturbances in illness. Emphasis on the analysis of patient problems and the nurse's role in the control of infection; pharmacology and drug therapy, responses of body to stress, maintenance of nutrition, and teaching patients in long-term illness. Clinical laboratory experience and a weekly discussion-seminar group.

80.209 Transition 9 Q.H.

(Prereq. Completion of or concurrent courses:

12.106-107, 18.141-142, 18.143-144, 18.148,

19.105-106, 18.120, 73.116)

The first nursing course for Registered Nurse students in the Baccalaureate Degree Program introduces the purposes and objectives of this program, and the philosophy of baccalaureate education; broaden students' perspectives of professional nursing; provides opportunities to complement and validate, through guided and independent study, the student's knowledge of roles and role conflicts, the communication process, group dynamics, and the nursing process, specifically with those patients experiencing the stresses of aging, chronic and long-term illness, and death. It also provides opportunities to understand human nutritional needs with specific emphasis on the aged and chronically ill individual.

81.101 Medical-Surgical Nursing I 11 Q.H.*

(Prereq. 80.101, 80.102, and 80.103)

The first of two courses in medical-surgical nursing, focusing on the pathophysiology and nursing care of the chronically ill medical-surgical patient. Modalities of therapy and related nursing intervention are presented, discussed, and applied in clinical situations through the use of the nursing process.

81.102 Medical-Surgical Nursing II 7 Q.H.*

(Prereq. 81.101 and 19.201, or 80.110, 19.102, 12.101, 18.120, 19.141, 19.142, 18.145, 18.146)

The second course in medical-surgical nursing, focusing on the pathophysiology and nursing care of the critically ill adult patient. Emphasis is placed on the rationale for medical intervention, modalities of therapies, patient teaching, and nutrition. Appropriate nursing intervention is presented, discussed, and applied in selected clinical situations through the use of the nursing process.

81.201 Medical-Surgical Nursing 9 Q.H.*

(Prereq. 80.207, 73.116, 80.209)

Focuses on conceptual approaches to selected physiologic problems encountered in the care of adult patients. Guided clinical experiences are planned, with special emphasis on the effects of illness on the individual's pattern of living, continuity of care, and health teaching. Multi-dimensional participatory learning experiences are provided throughout the course. Classroom and clinical experiences focus on the knowledge and skills necessary to plan and implement comprehensive health care.

82.101 Maternal and Child Health 12 Q.H.*

(Prereq. 80.103 or 80.110, 19.105, 19.141, 19.142, 12.101, 18.117, 18.120, 18.145, and 18.146)

Guided clinical experiences are provided in selected maternity and pediatric settings.

82.201 Maternal and Child Nursing 9 Q.H.*

(Prereq. 80.207, 73.116, 19.141, or 80.209)

Focuses on the nursing needs of mothers and children. Students are required to participate in field experiences in selected maternity and pediatric settings. Because of the nature of these settings, many evening and weekend hours are required. Students are responsible for own transportation. Course places emphasis on the role of the nurse as a health teacher and explores current problems relating to maternal and child welfare and their implications to nursing.

83.110 Psychiatric Nursing 8 Q.H.*

(Prereq. 81.101 and 82.101; or 80.110 and 19.201)

Offers students the opportunity to acquire additional knowledge of human behavior; to achieve understanding of selected human motivations and defenses; and to learn additional interpersonal skills which may be used in providing nursing care. The opportunity to apply this knowledge, to observe and analyze behavior, and to practice skills is offered in supervised laboratory sessions.

83.201 Psychiatric-Mental Health Nursing

(Prereq. 80.207; 73.116 or 80.209)

Designed to help students develop knowledge of mental illness, understanding of the dynamics of human behavior, and skill in working with individuals and groups of patients in the prevention of mental illness and promotion of mental health.

84.201 Public Health Nursing

9 Q.H.*

(Prereq. 81.201, 82.201, 83.201, 19.142 and 20.100)

Study of the variety of ways in which communities organize to meet the health and welfare needs of their members. Principles of public health and public health nursing are examined in depth. Attention is given to current health and welfare legislation, environmental factors affecting health, and the role of the nurse in prevention of disease and maintenance of health. Laboratory experiences provide opportunities to work with individuals, families, and community agencies.

85.201 Contemporary Nursing

9 Q.H.*

(Prereq. 84.201)

The final nursing course before graduation. Includes lectures, seminars, progress reports, and eight weeks of student-selected placement experience. The core content includes legal aspects, roles, leadership, change, and research methods. Students have the opportunity to demonstrate self-direction by defining their objectives for placement experience, pursuing an area of nursing in which they are particularly interested, utilizing basic principles of research, and evaluating their own performance.

Allied Health Professions

General Courses

86.102 Hospital Law

2 Q.H.

An analysis of the legal principles relating to medical and paramedical practice within a hospital environment. The common law and statutory rights of the hospital, practitioner, and patient are discussed.

86.103 Basic Medical Terminology

2 Q.H.

A study of the language of medicine and health care. Emphasis is on disease, procedures, and symptomatic terms and their definitions, word construction, analysis, and application. The student is provided an opportunity to acquire working knowledge of medical terminology.

86.107 Medical Terminology

4 Q.H.

A study of the language of medicine, including prefixes, suffixes, roots, abbreviations, and disease, operative, and drug terms. Also included are terms related to all area specialties. The terms are studied as they relate to a specific system of the body.

86.112 Foundations of Medical Science I

3 Q.H.

Major disease problems in our society and modes of treatment. Discussion of organized care, diagnosis, and treatment. Consideration of reproduction, birth, and pediatrics.

86.113 Foundations of Medical Science II

3 Q.H.

(Prereq. 86.112)

A continuation of 86.112, covering heart, cancer, stroke, blood and lymphatic diseases, accidents, and musculoskeletal, respiratory, and gastrointestinal diseases.

87.134 Dynamics of Health Care

2 Q.H.

Provides an overview of the health-care system

to help students develop familiarity with health-related terms and concepts.

86.160 Introduction to Data Processing for the Health Sciences

4 Q.H.

This is an introductory course designed to introduce the student to the basic concepts of electronic data processing. Topics considered include input, output, storage, computation, and controls. The basic history of automation is reviewed and the concept of computer language is introduced utilizing FORTRAN. Simple problems are completed on an individual and group basis.

*Lab fee required.

Medical Laboratory Science

The Medical Laboratory Science professional courses are taught by University faculty, together with supportive clinical faculty.

87.100 Laboratory Medicine—Orientation 1 Q.H.
The history and development of the medical laboratory technologies and pathology.

87.101 Basic Medical Laboratory Science 4 Q.H.*
(Prereq. 18.132, 12.104, or 12.107)
Introductory course in the basic medical laboratory sciences: methods, principles, and theories of urinalysis and basic hematology.

87.102 Basic Medical Laboratory Hematology 2 Q.H.
(Prereq. 87.132)
Principles and procedures and basic medical laboratory hematology, including basic hemostasis.

87.103 Basic Medical Laboratory Immunohematology 2 Q.H.*
(Prereq. 87.132)

Basic principles in immunohematology and related techniques, with particular emphasis on those procedures used in blood banking.

87.104 Basic Medical Laboratory Science Clinical Microbiology 4 Q.H.*
(Prereq. 18.132)

Basic principles and techniques of organism isolation, cultivation, and identification from clinical specimens. Elementary serologic procedures will be discussed.

87.105 Basic Medical Laboratory Chemistry and Instrumentation 4 Q.H.*
(Prereq. 12.171 and 87.101)

Principles, procedures, and techniques of basic clinical chemistry and instrumentation.

87.106 Basic Electronics and Medical Laboratory Science Instrumentation I 1 Q.H.
(Prereq. 87.155, 11.171 or concurrently)
Electricity, electronics, and electronic components with application to medical laboratory instruments.

87.107 Basic Electronics and Medical Laboratory Science Instrumentation II 1 Q.H.
(Prereq. 11.172 and 87.165)
Further study of clinical instrumentation and electronics. Preventative maintenance, trouble shooting, and minor repairs of the instruments according to the manufacturer's standards are included.

87.109 Foundations of Clinical Laboratory Science 4 Q.H.
(Prereq. Admission to Physician Assistant Program)
Basic laboratory methods employed in primary care, including urinalysis, gram staining, hematocrit, hemoglobin, sedimentation rate, white cell count, and differential.

87.134 Dynamics of Health 2 Q.H.
(Replaces 87.131-133)

87.141 MLT Applied Study in Clinical Microbiology 2 Q.H.
(Prereq. 87.100, 87.150, 87.151, 87.152, 87.153, 87.154, 87.155, and admission to AD-MLT Clinical Program)
Clinical practicum in microbiology at a Northeastern University affiliated hospital providing AD-MLT-level instruction.

87.142 MLT Applied Study in Hematology 2 Q.H.
(Prereq. 87.100, 87.150, 87.151, 87.152, 87.153, 87.154, 87.155, and admission to AD-MLT Clinical Program)
Clinical practicum in hematology and coagulation at a Northeastern University affiliated hospital providing AD-MLT-level instruction.

87.143 MLT Applied Study in Blood Banking 2 Q.H.
(Prereq. 87.100, 87.150, 87.151, 87.152, 87.153, 87.154, 87.155, and admission to AD-MLT Clinical Program)
Clinical practicum in blood banking at a Northeastern University affiliated hospital providing AD-MLT-level instruction.

87.145 MLT Applied Study in Clinical Chemistry 2 Q.H.
(Prereq. 87.100, 87.150, 87.151, 87.152, 87.153, 87.154, 87.155, and admission to AD-MLT Clinical Program.)
Clinical practicum in clinical chemistry and urinalysis at a Northeastern University affiliated hospital providing AD-MLT-level instruction.

87.150 Basic Medical Laboratory Science I 3 Q.H.*
(Prereq. 18.132 and 12.104, or 12.107)
Introductory course in basic medical laboratory science. Principles and theories of renal physiology, with laboratory emphasis on techniques for chemical and microscopic detection of normal and abnormal constituents.

87.151 Basic MLS Hematology I 3 Q.H.
(Prereq. 18.132 and 12.104, or 12.107)
Introductory course in basic hematology procedures and principles: hemoglobin, hematocrit, white and red blood cell counts, and white cell differentiation.

87.152 Basic MLS Hematology II 3 Q.H.
(Prereq. 87.151 or 87.101)
Principles and procedures of hematology, with emphasis on hematologic cell maturation and morphology and basic hemostasis.

87.153 Basic MLS Immunohematology 3 Q.H.*
(Prereq. 18.132)
Basic principles in immunohematology, with specific application to the A, B, O, and Rh blood group systems, antibody detection, and crossmatch design. Basic blood bank tech-

niques to include blood typing and cross-matching.

87.154 Basic MLS Clinical Microbiology 6 Q.H.*
(Prereq. 12.104 or 12.107, and 18.132)

Basic principles and techniques of organism isolation, cultivation, and identification from clinical specimens. Elementary serologic procedures are discussed.

87.155 Basic MLS Clinical Chemistry and Instrumentation 5 Q.H.*

(Prereq. 87.150 or 87.101)

Principles of clinical chemistry with application to procedures and techniques. Laboratory emphasis on instrumental analysis of specific clinical chemical specimens.

87.162 Hematology—Applied Study 3 Q.H.

(Prereq. Acceptance to MT clinical program)

Clinical practicum in applied hematology at an affiliated, accredited hospital medical technology program.

87.163 Immunohematology Applied Study

(Prereq. Acceptance to MT clinical program) 2 Q.H.

Clinical practicum in applied immunohematology at an affiliated, accredited hospital medical technology program.

87.164 Clinical Microbiology Applied Study

(Prereq. Acceptance to MT clinical program) 5 Q.H.

Clinical practicum in applied microbiology at an affiliated, accredited hospital medical technology program.

87.165 Clinical Chemistry Applied Study 5 Q.H.

(Formerly 87.115)

(Prereq. Acceptance to MT clinical program)

Clinical practicum in applied clinical chemistry at an affiliated, accredited hospital medical technology program.

87.180 MLT Seminar I 2 Q.H.

(Prereq. 87.100, 87.150, 87.151, 87.152, 87.153, 87.154, 87.155, and admission to AD-MLT Clinical Program)

Basic introduction to correlation of laboratory findings in hematology, blood banking, microbiology and clinical chemistry, with appropriate referrals of laboratory information in working situation. Basic use of quality control.

87.181 MLT Seminar II 2 Q.H.

(Prereq. 87.180)

Continuation of 87.180 and introduction to selected new laboratory techniques. Emphasis on the role of the AD-MLT technician in a working laboratory.

87.190 Undergraduate Research 2 Q.H.

(Prereq. special permission)

Special problems in laboratory medicine involving individual research under the direction of a faculty member.

87.203 Medical Immunology and Serology

(Prereq. 87.153) 2 Q.H.

Medically applied immunological and serological concepts and procedures. Discussion of immunologic results as they relate to disease states.

87.204 Medical Parasitology 2 Q.H.

(Prereq. 87.154, 18.220, and 18.221)

Laboratory identification of parasites of human significance. Life cycles related to mode of infestation, effect on man, and diagnostic form.

87.211 Hemostasis 2 Q.H.

A lecture/laboratory course covering advanced hemostatic techniques. Theory and methodology will be stressed, along with interpretation of laboratory results.

87.213 Immunohematology 2 Q.H.*

(Prereq. 87.103, 87.153)

Advanced studies in antigen-antibody detection and problem solving through immunohematological tests. Discussion of related hematologic disorders and the medical/legal aspects of blood banking.

87.221 Medical Laboratory Management 2 Q.H.

(Prereq. Completion of clinical program)

Survey of factors which relate to effective laboratory administration: hospital organizational structure, principles of management and supervision, cost accounting, purchasing, inspection guidelines, legal responsibilities, and personnel relations.

87.222 Histochemistry 2 Q.H.*

(Prereq. 87.252 or 87.312)

The histochemistry of hemic cells and techniques used in diagnosis of hematological disorders.

87.226 Medical Laboratory Science Education

(Prereq. Completion of clinical program) 2 Q.H.

Survey of current topics in medical laboratory science education: developing objectives, methods of evaluation and certification, clinical instruction and evaluation, medical laboratory science curricula, and use of media and other methods of instruction.

87.250 Communications in the Health Sciences

(Prereq. 87.152, 87.153, 87.154, 87.155) 4 Q.H.

Effective communications in the medical scientific community to include journal articles, resource material, abstracts, and health-related interpersonal communications.

87.252 Hematology 3 Q.H.

(Prereq. 87.152)

Physiology of blood cells and bone marrow with a review of hemopoiesis. Discussions of hematologic results as they relate to normal, anemic, and leukemic conditions. Coagulation studies and factor deficiency identification.

87.253 Immunochemistry 2 Q.H.

(Prereq. 87.153)

Blood group systems, antibody identification, and advanced immunochemical principles and procedures. Case studies will be presented.

87.254 Clinical Microbiology 5 Q.H.

(Prereq. 87.154 and 18.221)

Identification and differentiation of bacterial and mycotic organisms of infectious disease significance. Organism virulence and host defense mechanisms are examined.

87.255 Clinical Chemistry 5 Q.H.

(Prereq. 87.155, 12.145, 12.171)

Principles and methodologies of current and special clinical chemistry procedures and techniques used in the medical laboratory for the assessment of human physiological conditions. Discussions of clinical chemistry results as they relate to pathophysiological conditions.

87.280 MLS Special Topics 2 Q.H.

(Prereq. 87.150 through 87.155)

A comprehensive examination of one or more current topics in the clinical laboratory.

87.281 MLS Senior Seminar 2 Q.H.

(Prereq. Completion of all clinical courses)

An integration of all aspects of the clinical laboratory based primarily on case studies presented and reviewed by students. A comprehensive examination is part of the course.

Health Record Administration

86.151 Health Record Science I 4 Q.H.

(Prereq. Two years of arts and sciences)

Introduction to health records; history of the medical record and medical record forms. A study of professional medical record administrators and their relationship to the health facility. Medical staff and committees in the hospital. Quantitative analysis of medical records.

86.152 Health Record Science II 4 Q.H.

(Prereq. 86.151)

The numbering, filing, securing, and preserving of medical records. Principles of law related to patient care and medical records. Study and practice of medical transcription, stressing the rules of privileged communications and the release of information to agencies.

86.153 Health Record Science III 4 Q.H.

(Prereq. 86.152)

Basic principles of compiling statistics for hospital and other health institutions. Includes the preparation of the daily census and discharge analysis; monthly, annual, and special reports. Birth and death certificates are included. Principles of standardized nomenclature of diseases and operations and international classification of disease, adapted - 8. Study of other indexes used in medical records departments.

86.154 Advanced Health Record Science IV

(Prereq. 86.153)

Advanced aspects of health/medical record science. Includes developing forms and forms control, planning and managing, and new record systems; advanced aspects deal with statistics and consulting in extended-care facilities and nursing homes.

86.157 Seminar in Health Records 2 Q.H.

(Prereq. 86.154 or concurrently)

Case study and discussion are used to integrate the discrete skills and knowledge of the professional curriculum into a meaningful whole by analysis of real and hypothetical problems. Coordination between the seminar and applied medical record science is emphasized.

86.158 Orientation to Medical Records I 1 Q.H.

An introductory seminar on the issues, activities, and opportunities in the medical record profession.

86.159 Orientation to Medical Records II 1 Q.H.

Continuation of seminar that introduces the medical record profession. Focuses on the tools utilized by the medical record professional.

86.161 Quality Assurance 4 Q.H.

(Prereq. 86.153-154, 86.107 or permission of instructor)

This course is designed to provide the student with the opportunity to gain knowledge of the issues and problems involved in designing, implementing, and maintaining quality assurance programs for health-care facilities. An opportunity will also be provided for the student to gain the technical skills necessary to carry out all aspects of the audit process, emphasizing the professional's role as facilitator to physicians and other professional staff.

86.162 Management Principles in Health Care

4 Q.H.

This course is an introduction to basic management principles. It is designed so that the hospital (or health-care facility) can provide the major source of example and case study, giving students an opportunity to synthesize abstract principles with practical application.

86.163 Systems Analysis, Health Oriented 4 Q.H.
(Prereq. 86.162)

This course is designed as an introduction to systems analysis, its concepts, and techniques. Specific application to Health Record Management is stressed throughout the course.

86.164 Special Topics I 2 Q.H.
Specialized study in Medical Records.**86.165 Special Topics II** 2 Q.H.
Specialized study in Medical Records.**86.166 Applied Health Statistics** 4 Q.H.
(Prereq. Basic statistics course)

Designed to provide the Health Record student with the opportunity to learn to apply basic statistical techniques to the gathering, analysis, and interpretation of health care and medical record data, as well as the effective use of these tools in such areas as departmental management and research studies. Agencies involved in collecting statistical data will be reviewed, with the types and sources of information they require; the relationship of statistics epidemiology and medical records will also be considered.

86.168 Medical Computer Applications 4 Q.H.
(Prereq. EDP Course I)

Utilization of electronic data processing in health care. Overview of current activities and their impact on future trends in health record management information will be discussed. The role of the RRA as an information specialist will be considered.

86.169 Independent Study 4 Q.H.
(Prereq. See instructor)

This independent study project is designed to give students an opportunity to explore in depth a subject relevant to their interests. It is designed to give them the opportunity to study a problem, present a proposal, carry out a study or a course of action, and prepare both written and oral presentations of their activities.

86.173 Clinical Seminar 2 Q.H.

Designed to integrate the didactic and the clinical experience at an early stage. It will provide a formal means by which students can share clinical developments with each other. It is designed to give them an opportunity to improve their competency in specific areas of medical record practice.

86.257 Organization and Management of Medical Records Department I 4 Q.H.

The study of the hospital, in particular, patterns of organization within hospitals: lines of responsibility and authority, medical staff and administrative organization, hospital departmental functions and organization. The study of fundamental principles and successful practices in getting office work accomplished. Office management problems and their solution; conceptual framework for the operation of essential management function; facilities, solutions, and contributions of the office.

86.258 Organization and Management of Medical Records Department II 4 Q.H.

The study of the development of an efficient medical records department in any medical care facility; application of the principles of organization and management in the development and administration of a system of medical information handling.

86.260 Applied Health Records Directed Practice I 3 Q.H.

(Prereq. 86.151)

Clinical practicum in medical record science in the general hospital.

86.261 Applied Health Records Directed Practice II 1 Q.H.

(Prereq. 86.260)

Clinical practicum in medical records science in specialized health settings.

86.264 Applied Health Records Science III 4 Q.H.

Clinical practicum in health/medical records management in the health-care facility.

Respiratory Therapy

86.201 Professional Practice Laboratory I

(Prereq. 86.221 concurrently) 1 Q.H.

This lab is designed to provide practice in basic care skills through laboratory exercises and simulation of patient-care situations.

86.202 Professional Practice Laboratory II

(Prereq. 86.201, 86.222 concurrently) 1 Q.H.*

The lab is designed to provide students hands-on experience in working with respiratory therapy equipment. Simulated patient-management problems will be set up in the lab to provide problem-solving experience.

86.203 Professional Practice Laboratory III

(Prereq. 86.202, 86.223 concurrently) 1 Q.H.*

The lab is designed to provide students hands-on experience in working with respiratory therapy equipment. Simulated patient-management problems will be set up in the lab to provide problem-solving experience.

86.204 Professional Practice Laboratory IV

(Prereq. 86.203, 86.224 concurrently) 1 Q.H.*

The lab is designed to provide students hands-on experience in working with respiratory therapy equipment. Simulated respiratory-care problems will be set up in the lab to provide problem-solving experience.

86.205 Cardiopulmonary Laboratory Practice

(Prereq. 86.225 concurrently) 1 Q.H.*

Designed as the laboratory portion of Cardiopulmonary Laboratory Technology. Focus is placed on the techniques of pulmonary functions testing, blood gas analysis, and cardiovascular testing commonly done in the clinical setting.

86.209 Clinical Practice I

4 Q.H.

(Prereq. 86.202, 86.203 concurrently)

The first course to provide clinical experience in hospitals, focusing on respiratory care for non-critical patients. Emphasis is placed on infection control, medical gas administration, humidification of medical gases, aerosol therapy, chest physiotherapy, deep-breathing treatments, and the administration of aerosol medications.

86.210 Clinical Practice II

4 Q.H.

(Prereq. 86.203, 86.204 concurrently)

The course is designed to provide clinical experience in hospitals. Emphasis is placed on respiratory care for critical patients. Advanced respiratory-care topics, such as airway care, mechanical ventilation, and positive and expiratory pressure, are reviewed.

86.211 Respiratory Therapy Seminar I

1 Q.H.

A survey course designed to introduce the beginning respiratory therapy student to the role of respiratory therapists in health-care delivery.

86.212 Respiratory Therapy Seminar II

1 Q.H.

A survey course designed to introduce the

beginning respiratory therapy student to the profession.

86.213 Respiratory Therapy Seminar III

1 Q.H.

A survey course designed to introduce the beginning respiratory therapy student to the role of respiratory therapists in health-care delivery.

86.214 Clinical Seminar I

1 Q.H.

(Prereq. 86.209 concurrently)

The seminar is designed to discuss clinical topics and respiratory-care problems encountered during clinical practice in the hospitals.

86.215 Clinical Seminar II

1 Q.H.

(Prereq. 86.210 concurrently)

The seminar is designed to discuss clinical topics and respiratory-care problems encountered during clinical practice in the hospitals.

86.216 Advanced Respiratory Therapy Seminar I

(Prereq. 86.271 concurrently) 1 Q.H.

Designed to complement the course entitled Advanced Life Support Systems I. Discussion of current clinical problems and research related to life support systems will emphasize problems encountered at the Harvard teaching hospitals.

86.217 Advanced Clinical Seminar II

1 Q.H.

(Prereq. 86.272 concurrently)

Designed to complement the course entitled Advanced Life Support Systems II. Discussion of current clinical problems and research related to life-support systems will emphasize problems encountered at the Harvard teaching hospitals.

86.218 Advanced Clinical Seminar III

1 Q.H.

(Prereq. 86.279 concurrently)

Designed to complement the courses entitled Respiratory Care for the Neonatal and Pediatric Patient, and Practicum in Critical Care. Discussion of current clinical problems and research related to critical-care problems will be emphasized.

86.219 Advanced Clinical Seminar IV

1 Q.H.

(Prereq. 86.280 concurrently)

Designed to complement the courses entitled Advanced Emergency Care, Advanced Medical Monitoring Techniques, and the Practicum in Critical Care. Discussion of current research related to critical-care problems will be emphasized.

86.221 Introduction to Patient Care

2 Q.H.

(Prereq. Satisfactory completion of the first year curriculum)

Designed to provide an opportunity for the student to gain knowledge and understanding of basic patient-care skills, including moving and positioning of patients, infection control, basic observation and assessment skills, and familiarity with the techniques of cardiopulmonary

resuscitation. An opportunity will also be provided for the development of the student's interpersonal and communication skills.

86.222 Introduction to Respiratory Care 3 Q.H.
(Prereq. 86.221 and Pharmacology concurrently)
This course is basic to all other professional respiratory therapy courses. Focus is on the theory and application of medical gas administration and humidity/aerosol therapy.

86.223 Respiratory Care for the Medical and Surgical Patient 3 Q.H.
(Prereq. 86.222)

This course is a continuation of the introduction to respiratory therapy. It is designed as the didactic portion of beginning clinical experience on noncritical patients. Focus is placed on respiratory-care problems following major surgery and those of a more chronic nature that are related to medical patients.

86.224 Respiratory Care for the Critical Patient
(Prereq. 86.223) 3 Q.H.
The course is the last in a sequence of three directly related to the theory of respiratory therapy procedures. It is designed as the didactic portion of clinical experience on critical patients. Focus is placed on respiratory-care problems encountered with patients in intensive care units.

86.225 Cardiopulmonary Laboratory Techniques 3 Q.H.
(Prereq. 86.227 and permission of instructor)

Designed to provide the student with an opportunity to gain knowledge and background in the principles, theory, and procedures encountered in a clinical cardiopulmonary laboratory. Focus will be placed on the physiologic foundations of cardiopulmonary testing.

86.226 Cardiopulmonary Physiology 4 Q.H.
(Prereq. Satisfactory completion of the first-year courses)

Designed to provide a detailed introduction to the structure and function of the cardiopulmonary systems. The material presented will emphasize clinical relevance and application in preparation for the basic courses in the clinical sciences.

86.227 Cardiopulmonary Disease 4 Q.H.
(Prereq. 86.226)

This course is designed to provide a detailed introduction to the clinical diagnostic procedures employed in evaluating cardiopulmonary patients and a description of the etiology, pathophysiology, diagnosis, and treatment of major cardiopulmonary diseases.

86.271 Advanced Life Support Systems I 4 Q.H.
(Prereq. 86.224, 86.225)

Designed to provide an in-depth coverage of selected techniques of advanced life support applied to the critically ill patient.

86.272 Advanced Life Support Systems II 4 Q.H.
(Prereq. 86.271)

Continuation of Advanced Life Support Systems I.

86.273 Advanced Emergency Care 4 Q.H.
(Prereq. 86.272, 86.274)

Designed to provide instruction in advanced emergency-care procedures both in the hospital setting and in the field.

86.274 Advanced Clinical Physiology 4 Q.H.
(Prereq. 73.204 and permission)

Lecture course designed to enrich the respiratory therapy students' program by providing them with an opportunity for an in-depth exposure to medical physiology, based on the concept of the homeostatic state and its application to the clinical setting.

86.276 Respiratory Care for the Neonatal Pediatric Patient 4 Q.H.

(Prereq. 86.272, 86.274)
Designed to provide the student with an understanding of the methods and techniques of respiratory therapy for neonatal and pediatric patients. Emphasis is placed on mechanical ventilation, newborn care, and the respiratory distress syndrome.

86.277 Directed Independent Study 2 Q.H.
(Prereq. 86.279 concurrently)

A course of directed study in his/her major wherein the student may undertake in-depth investigation of a special interest area.

86.278 Advanced Medical Monitoring 4 Q.H.
(Prereq. 86.272, 86.274)

Lecture course designed to enrich the respiratory therapy students' program by providing them with an opportunity for an in-depth exposure to the theory and application of physiologic monitoring systems and their use in critical-care setting.

86.279 Practicum in Critical Care 2 Q.H.
(Prereq. 86.272, 86.274, 86.276, concurrently)

Designed to allow the student to select an area of emphasis from among the following: 1) intensive care units, 2) neonatal-pediatrics, 3) emergency care, 4) extracorporeal membrane oxygenation. During the practicum courses students are provided with an opportunity to work in their emphasis areas, i.e., neo-natal/pediatric students may study at Children's Hospital Medical Center.

86.280 Practicum in Critical Care 2 Q.H.
(Prereq. 86.279)

A continuation of 86.279.

86.281 Introduction to Perinatal/Pediatric Respiratory Care 2 Q.H.
(Prereq. 86.224 Resp. Care)

This course is designed to provide the student with the opportunity to acquire knowledge and understanding of human cardiopulmonary

development from the time of conception through childhood years. Normal as well as abnormal manifestations of pregnancy, labor, and the process of delivering are also emphasized. Methods and techniques of assessment and delivery of respiratory care will relate to the pediatric patient's pathophysiology of cardiopulmonary disease.

Cooperative Education

90.111 Career Planning for Criminal Justice

2 Q.H.

Introduction to career planning and its implications for cooperative education. Topics to be considered include assessment of interests, values, and skills, decision making, and goal setting.

90.112 Career Planning for Criminal Justice

2 Q.H.

A two-quarter sequence meeting weekly for one, 100-minute seminar. Focus on self-awareness (values clarification, interests, lifestyles, and skills), career awareness, communications (interpersonal, resumes, letters and interviewing), understanding organizations, goal setting, and decision making.

90.114 Life/Career Planning

4 Q.H.

An elective course open to upperclassmen in any of the Basic Colleges, emphasizing self-awareness, career awareness, and job-finding skills.

90.251 Placement Techniques

1 Q.H.

Career selection and development are discussed concurrently with resume preparation, interviewing techniques, and effective written communication to facilitate the planning and implementation of a professional career program.

90.253 Professional Development for Teachers

1 Q.H.

An examination of the following topics: analysis

of the job market for teachers, role of the Education Placement Office, career opportunities in education beyond public school teaching, graduate study, and certification procedures. A discussion of resume preparation and interviewing techniques is also included.

90.255 Professional Development in Criminal Justice

1 Q.H.

Career options in criminal justice are reviewed, along with the techniques of resume preparation, interviewing, and effective written communication.

90.256 Career Management in Physical Therapy

1 Q.H.

Career management in physical therapy is examined in view of professional development and career opportunities; other discussions include resume preparation, communications, and the interview process.

90.258 Professional Development for Engineers

1 Q.H.

Career development in engineering is examined with a view to current practice and developing trends, along with discussion of resume preparation, interviewing techniques, and effective written communication.

Military Science

91.101 U.S. Defense Establishment

1 Q.H.

History, organization, and mission of the Department of Defense. The mission and organization of the United States Army is studied with emphasis on career opportunities, future education, and individual service obligations.

91.104 American Military History

2 Q.H.

The development of the United States Army from the time of the American Revolution to the present. Selected battles and campaigns, coupled with major periods of international crises. The modernization of the American military and the conduct of war.

91.112 Military Leadership

1.5 Q.H.

An examination of the dynamics and principles of leadership. The leader's role, and duties and leader-subordinate relationships are stressed. Case studies depicting typical leadership problems will be analyzed.

91.113 Small Unit Tactics and Teams

1.5 Q.H.

Introduces the fundamentals of offensive and defensive combat at the squad and platoon level. Troop-leading procedures, planning, and combat orders are also stressed.

91.114 Fundamentals and Theories of the Military Team 1.5 Q.H.

(Prereq. 91.112, 91.113)

Combined arms tactics at the company level are discussed. The organization of the unit and responsibilities of the key officers are examined in detail. Practical exercises are used to simulate actual situations, with students filling leadership roles.

91.116 Military Law and Administration 1.5 Q.H.

A review of the history of military law; the military judicial system, including courts martial and alternatives to courts martial; and international law governing land warfare (Geneva Conventions), focusing on legal problems encountered by, and authorities applicable to, the junior leader. Course also includes a summary description of additional administrative duties commonly assigned to a junior leader.

91.120 Methods of Instruction 1.5 Q.H.

An introduction to the fundamentals of teaching and principles of learning. Emphasizing practical applications, the course will cover multimedia instructional techniques, lesson planning, and training management.

91.124 World Balance 1.5 Q.H.

A study of international military powers within a world of growing economic interdependence. Emphasis will be on ramifications of third world raw materials on the military superpowers.

91.126 Advanced Leadership Clinic 1.5 Q.H.*

(Prereq. 91.112, 91.113, 91.114)

A blend of classroom, practical exercise, and field training designed to help cadets prepare for attendance at advanced camp. Review and instruction in map reading/orienteering, drill and ceremonies, weapons familiarization, and first aid. Practical exercises in leadership are built around physical training, swimming, and task-oriented situations. Field training is accomplished during one weekend at Fort Devens, with an emphasis on achieving minimum requirements in training and physical fitness.

91.127 Officer Development Seminar 2 Q.H.

(Replaces 91.121, 91.122, 91.123 and 91.118)

(Prereq. Senior cadets only)

Designed for senior cadets. Techniques concerning the communicative process and management of resources at the company level are examined. Personal affairs, with an emphasis on financial management, benefits, and estate planning, are discussed. Selected branches of the Army are surveyed. Additional duties of junior officers, the promotion system, personnel management system, and schooling and career opportunities are studied.

91.130 Land Navigation/Map Reading 1 Q.H.

Use of map and compass as land navigation aids. Grid coordinates, intersection, resection, and terrain association. Introduction to orienteering.

*Lab fee required.

91.131 Orienteering

2 Q.H.

(Prereq. 91.130)

Orienteering as a sport. Types of orienteering, meet administration, course layout. Emphasis on orienteering techniques with student participation in several orienteering meets.

91.132 Leadership I

1 Q.H.

An introduction to the fundamentals and principles of small-group leadership. Development of functions, duties, and responsibilities for small-group leaders.

91.133 Leadership II

1 Q.H.

(Prereq. 91.132)

Applied leadership for small groups. Application of leadership techniques and development of leadership skills through practical exercises in different environmental circumstances.

91.134 Rappelling

1 Q.H.

Instruction in the basic skills and techniques of rappelling. The course will cover the equipment, its proper use, and the basic rappelling techniques to include seat-hip, body, and hasty rappelling. Emphasis will be placed on proper knot tying and safety measures to be observed during mountain operating.

91.135 Marksmanship

1 Q.H.

Instruction in basic marksmanship techniques, safety, and range commands. The course will cover regulations governing competition firing, with emphasis on the development of skills through practice.

91.136 Leadership III

1 Q.H.

Fundamentals of drill and ceremonies, military formations, and the performance of basic marching movements, with and without weapons. Voice development and correct inflection for giving commands. Opportunity for participation in civic ceremonies as part of a marching unit or honor guard. Objectives are to instill teamwork, confidence, pride, alertness, attention to detail, *esprit de corps*, and discipline.

91.137 Leadership IV

1 Q.H.

(Prereq. 91.136)

Trick drill and ceremonies requiring accuracy and timing of marching movements. Techniques of precision drill, including spins and throws, are emphasized. Drill will be performed using weapons with bayonets. Opportunity for participation in competition drill meets.

91.138 Leadership V

1 Q.H.

Instruction in the planning and supervision needed to conduct organized physical training.

91.140 Advanced Leadership Laboratory 6.0 Q.H.

(Prereq. Basic course and 91.126)

External leadership laboratory conducted at Fort Bragg, North Carolina. Course prerequisites are mandatory without exception. Intensive 5-week schedule includes the practical application of leadership principles in multiple positions at varying levels of responsibility. The students will

face a variety of stressful, demanding situations which will force them to draw upon both physical and mental reserves. Successfully meeting these challenges indicates the poise and self-assurance necessary for effective leadership. Supplemental instruction includes physical conditioning, counseling, senior-subordinate relations, tactical doctrine, international laws of land warfare, and approaches to problem solving. Course attended by students from 123 colleges and universities from Maine to Florida. All expenses are borne by the United States Government, including a stipend of approximately \$500.

91.201 Air Force Today 1 Q.H.

Examines the role of the Air Force in the contemporary world by studying the total force structure, strategic offensive and defensive forces, general-purpose forces, and aerospace support forces.

91.202 Leadership Laboratory 1 Q.H.

Introduction to the customs, traditions, and courtesies of the Air Force through seminars, guest speakers, and a field trip to an Air Force base.

91.203 Air Force Today 1 Q.H.

(Prereq. 91.201)

Continuation of 91.201. Examines the role of the Air Force in the contemporary world by studying the total force structure, strategic offensive and defensive forces, general-purpose forces, and aerospace-support forces.

91.204 Leadership Laboratory 1 Q.H.

(Prereq. 91.202)

Continues 91.202 with emphasis on the role and responsibilities of an Air Force junior officer.

91.205 The Development of Air Power 1 Q.H.

The course includes the development of air power from balloons and dirigibles through the peaceful employment of United States air power in relief missions and civic action programs in the late 1960s, and in the air war in Vietnam.

91.206 Leadership Laboratory 1 Q.H.

(Prereq. 91.204)

Emphasizes the development of techniques used to direct and inform. Students are assigned leadership and management positions in the 91.202 programs described above.

91.207 The Development of Air Power 1 Q.H.

(Prereq. 91.205)

Continuation of 91.205. The course includes the development of air power from balloons and dirigibles through the peaceful employment of United States air power in relief missions and civic action programs in the late 1960s, and in the air war in Vietnam.

91.208 Leadership Laboratory 1 Q.H.

(Prereq. 91.206)

Continues 91.206. Adds a special program in preparation for Field Training.

91.209 National Security Forces in Contemporary American Society

4 Q.H.

Composed of academic study and a leadership laboratory. The academic portion of the course includes an examination of military professionalism and existing patterns of civil-military relations, an analysis of the international and domestic environments affecting United States defense policy, an examination of the post-World War II development of defense strategy and the methods of managing conflict, and an extensive study of the manifold variables involved in the formulation and implementation of national security policy. Within this structure, continued attention is given to developing the communicative skills required of junior officers.

91.210 Leadership Laboratory

1 Q.H.

(Prereq. 91.208)

Supervisory practice and exercise of leadership functions in controlling and directing activities of the cadet corps. Development of leadership potential in a practical, supervised training laboratory, which typically includes field trips to Air Force installations.

91.211 National Security Forces in Contemporary American Society

4 Q.H.

(Prereq. 91.209)

Composed of academic study and a leadership laboratory. The academic portion of the course includes an examination of military professionalism and existing patterns of civil-military relations, an analysis of the international and domestic environments affecting United States defense policy, an examination of the post-World War II development of defense strategy and the methods of managing conflict, and an extensive study of the manifold variables involved in the formulation and implementation of national security policy. Within this structure, continued attention is given to developing the communicative skills required of junior officers.

91.212 Leadership Laboratory

1 Q.H.

(Prereq. 91.210)

Continues the emphasis in 91.210 on supervisory and leadership skills. Provides staff-training experience through a class project requiring a written report.

91.213 Air Force Management and Leadership

4 Q.H.

A study of management from the point of view of the Air Force junior officer, including the subjects of military leadership and military law. Attention is devoted to the progressive development of the communicative skills needed by junior officers.

91.214 Leadership Laboratory

1 Q.H.

(Prereq. 91.212)

Exercise of management functions in planning, supervising, and directing cadet corps activities to acquire proficiency in military leadership skills.

91.215 Air Force Management and Leadership 4 Q.H.
(Prereq. 91.213) Continues 91.213. Provides general theory and practice of management with special reference to Air Force application. Introduction to information systems, quantitative approaches to decision-making, and resource-control techniques.

91.216 Leadership Laboratory 1 Q.H.
(Prereq. 91.214) Continues 91.214. Includes preparation for professional duties.

91.218 Leadership Laboratory 1 Q.H.*
Drill and ceremony seminars on current Air Force activities.

91.220 Leadership Laboratory 1 Q.H.*
Practice in leadership position. Evaluation, analysis, and problem solving.

91.222 Leadership Laboratory 1 Q.H.*
Group problem solving. Staff-training experience through a class project requiring a written report.

91.224 Leadership Laboratory 1 Q.H.*
Advanced leadership experiences, including staff studies.

91.226 Leadership Laboratory 1 Q.H.*
Continues orientation for Air Force officer duties. Study of officer specialties and career patterns.

Criminal Justice

92.104 Administration of Criminal Justice 4 Q.H.
Surveys the contemporary criminal justice system from the initial contact with the offender through prosecution, disposition, incarceration, and release to the community. Emphasis is placed on major systems of social control: police, corrections, juvenile justice, mental health systems, and their policies and practices relative to the offender. A balance is maintained in providing legal, empirical, and sociological materials.

92.107 Human Factors in Policing 4 Q.H.
(Prereq. 92.115) Human Factors in Policing focuses on the theory and practice of human relations and conflict management necessary for effective policing. It is recommended for those with a career interest in policing.

92.108 Survey of Correctional Systems 4 Q.H.
(Prereq. 92.137) An introduction to penology and corrections, exploring the public reaction to convicted offenders historically, while concentrating on issues and programs of contemporary corrections.

92.110 Police-Community Relations 4 Q.H.
(Prereq. 92.131, 92.115, and junior or senior status) Police-public contact; uses of the communications media in projecting the police image; responsibilities of police in dealing effectively with minority groups, civil rights, civil disorder, and public protection. An exploration of the role and function of the police in intergroup relations.

92.115 Police Operations 4 Q.H.
(Prereq. 92.131) A general survey of police operational procedures, including patrol, traffic, interrogations, and report writing. Role playing is used extensively to demonstrate interviewing methods.

92.128 Introduction to Private Security 4 Q.H.
Examines the organization and administration of security and loss prevention programs in industry, business, and government. The emphasis is placed on the protection of assets, personnel, and facilities, and focuses on the relationships between security organizations and governmental agencies.

92.129 Criminal Justice Planning 4 Q.H.
(Prereq. 91.157, a statistics course, and junior or senior status) Examines criminal justice planning theory and methods. Emphasis on the need for criminal justice planning and the tools used in the planning process. Students in small groups are expected to prepare a sample criminal justice plan during the term.

92.130 Criminalistics I: Criminal Investigation 4 Q.H.
Criminal investigation dealing with areas of investigation, case preparation, and applied physiology.

92.131 Law Enforcement Administration and Management 4 Q.H.
The principles of police organization, administration, and management, including staff and line functions, chain of command, span of control, selection of personnel, and promotional systems. Consideration is also given to special problems such as strikes, natural and atomic disasters, narcotic traffic, and vice control.

92.134 Constitutional Problems 4 Q.H.
(Prereq. 92.141) A required course focusing on an historical evaluation of the 14th Amendment and its use in making rights prescribed under the Bill of Rights applicable to the individual states. Also detailed in the course are the inherent problems of the Fifth and Sixth Amendments, including the effect of their implications on such matters as

*Lab fee required.

police practices, illegal search and seizure, and right to counsel. Students are expected to be familiar with basic concepts as well as changing interpretations so that they can cite cases which may stand as precedents for conclusions they draw.

92.137 Criminology 4 Q.H.
Patterns and evolution of criminal behavior, the social forces involved, and development of the individual criminal; administration of criminal justice; law, courts, police, prisons.

92.139 Theories in Penology 4 Q.H.
(Prereq. 21.100 and 92.137)

A philosophical approach to the development of punishment in the United States, as examined in an historical context. Issues of justice and morality are considered as they are manifested in contemporary penal structure. Readings include selections from 18th-, 19th-, and 20th-century novelists, philosophers, and criminologists.

92.140 Criminalistics III: Arson and Fire Investigation 4 Q.H.

A course in the examination and behavior of fire. Deals with fire-related phenomena such as convection, radiation, contact, and ignition and includes consideration of arson, explosions, asphyxiation, and combustibility. The course will also cover fireproofing agents such as plastics, textiles, building materials, and the chemistry of the halogens. Finally, some time is given to areas of fire experimentation and the potential for more sophisticated inquiry.

92.141 Criminal Law 4 Q.H.

Deals with the area of criminal responsibility, some of its limitations, and certain modifications substantially affecting it. The course requires an ability to express in writing both the knowledge of a particular concept and the ability to identify it in a complex fact pattern and discuss its implications and ramifications.

92.142 Survey of Criminal Evidence 4 Q.H.
(Prereq. 92.141, 92.134)

A survey course which focuses upon the fundamentals of criminal trial procedure and the rules of evidence as they apply to the trial of a criminal case. Students are required to read and brief criminal court cases.

92.143 Criminalistics II: Forensic Laboratory 4 Q.H.*
(Prereq. 92.130 and permission of instructor)

A survey of the elements of microscopy, spectroscopy, and basic chemistry as they apply to the study of firearms, hair, fibers, blood, paint, tools, glass, documents, laundry marks, poisons, and other materials which comprise physical evidence.

92.147 The Administration of Juvenile Justice 4 Q.H.
(Prereq. 21.100, 92.137)

Course work examines the juvenile court, its philosophy, procedure, and personnel. Focus is on the discretionary processes by which juveniles are labeled delinquent, dependent, and neglected. The roles played by police, prosecution, defense, bench, and social service workers are considered. Field visits are arranged.

92.148 Probation and Parole 4 Q.H.
(Prereq. 21.100)

Examines the nature and problems of correctional field service, both adult and juvenile.

92.149 Alternatives to the Incarceration of Juvenile Offenders 4 Q.H.

(Prereq. 92.131, 92.115 and junior or senior status)

Examines the concept of juvenile justice in terms of the alternatives to and the negative consequences of institutionalization of juvenile offenders. Examines diversion from court, probation, crisis centers, halfway houses and other alternatives. Includes examination of sanctions imposed on youth and the roles of the various "arms" of the "justice system."

92.155 Seminar in Law Enforcement 4 Q.H.
(Prereq. 92.131, 92.115 and junior or senior status)

An opportunity for free discussion about the numerous problems facing the law enforcement officer. Periodic oral and written reports are required. Guest lecturers are invited to participate in and lead discussion sessions. An effort is made to have students formulate their own philosophy of law enforcement prior to graduation.

92.156 Seminar in Law and Criminal Justice 4 Q.H.
(Prereq. 92.141, 92.134, and junior or senior status)

Specific topic to be announced.

92.157 Research Methods in Criminal Justice 4 Q.H.
(Prereq. A statistics course, and middler, junior, or senior status)

Development of research design of the kind most useful to criminal justice problems; understanding some of the most important issues and problems facing researchers in the field; use of various data collection methods including observation, interviewing, questionnaire construction, and scales for survey analysis; validity and reliability; computer application in criminal justice.

92.159 Crime and Psychopathology 4 Q.H.
(Prereq. Intro. to Psychology)

An overview of the relationships between crime and mental disorders. Criminal responsibility. Classification of mental disorders, psychoses, neuroses, character disorders. Concentration on the origins and treatment of such disorders as multiple personality, paranoid schizophrenia,

manic behavior, and psychopath. Stress management.

Note: Not open to students who have taken Abnormal Psychology and not recommended for students considering graduate work as psychology majors.

92.167 Correctional Institutions 4 Q.H.
(Prereq. 92.139)

An analysis of the organization and administration of correctional institutions.

92.168 Crime and Social Defense 4 Q.H.
(Prereq. 92.104, 21.100, or equiv.)

Examines the problems of crime and its control from a comparative perspective. Countries such as the Soviet Union, China, France, East and West Germany, Great Britain, Holland, Finland, and Sweden will be analyzed, in terms of incidence and type of deviance and crime, as well as in terms of their approach to social control and the prevention of crime. Points of divergence between these countries and the United States will be examined, with regard to their perceived causes of crime, and their differing approaches to rehabilitation and crime prevention.

92.170 Women and the Criminal Justice System 4 Q.H.
(Prereq. Middlers, juniors, and seniors only)

This course is intended to introduce students to issues relating to roles taken by women involved with the criminal justice system and to the system's various responses to women in these roles. Specific focus will be directed toward women as victims of crime, as offenders, and as practitioners.

92.181 Police Discretion 4 Q.H.
(Prereq. Juniors and seniors only)

Examines the nature and impact of discretion as it relates to police decision making. Attention is given to various forms of police discretion and ways in which it can be structured, confined, and checked. Students have the opportunity to examine and learn to analyze sample police departmental policies and study different formal and informal methods of developing policies. Students also study the relationship of discretion to controlling police behavior and police corruption.

92.191, 92.192, 92.193, 92.194 Directed Study 4 Q.H.
(each)

92.209 The Female Offender 4 Q.H.
(Prereq. 21.100 and 92.137)

The course addresses itself to the female at various stages in the criminal justice system, from commission of a crime to parole. Both the juvenile and adult offender are studied. The thrust of the course is at critical analysis of existing theory and research on the female offender, with emphasis on the socialization, roles, and social participation of society at large.

The male offender is also considered at each level for purposes of comparison.

92.210 Topics in History of Criminal Justice 4 Q.H.

An historic survey of the principles of criminal justice in the ancient and medieval periods, with emphasis upon the impact of religion and philosophy.

92.211 Topics in History of Criminal Justice 4 Q.H.

A continuation of the historic survey with an examination of the effect of the Renaissance, the Reformation, and the rise of nation states.

92.215 Stigma and Justice 4 Q.H.
(Prereq. Middler, junior or senior status)

Student introspection and articulation of ideas will be encouraged and expected in this course which will examine the history, theory, and reality of social and legal problems faced by those who are stigmatized. The effect of stigmatization, and the possibility of re-integration of offenders, ex-offenders, mental patients, ex-mental patients, men and women "on the street," addicts, alcoholics, the physically ill or disfigured, dishonorably discharged veterans, etc., will be analyzed in the course. The major focus will be directed toward an examination of the manner in which the criminal justice system stigmatizes its clientele and how, in turn, some people who are stigmatized by society are much more prone to being clients of criminal justice.

92.216 Evidence I 4 Q.H.
(Prereq. 92.141, 92.134)

The goal of this course is to provide students the opportunity to develop their understanding of the manner in which legal issues and disputes are resolved by trial. Study will focus on the manner in which the trial system works and the reasoning behind the rules governing its operation, including rules of evidence: the mechanics of the adversary system, relevancy, reliability, and rules of exclusion based upon policy considerations other than relevancy and reliability. Learning tools will include videotapes, mock trials, observation of actual court trials, lectures, take-home assignments, and exams.

92.217 Evidence II 4 Q.H.
(Prereq. 92.216)

This course will continue with reliability and rules of exclusion, based upon policy considerations other than relevancy and reliability as set forth in Part I.

92.218 Aggressive Behavior 4 Q.H.
(Prereq. Intro. to Psychology)

An overview of aggressive behavior from a psychological perspective. Examines instinctive/biological views of aggression in animals and people. Assesses dangerousness, and studies psychoanalytic theory and aggression. Social learning and aggression: impact of TV and

film violence. Social influence and aggression: authoritarianism, obedience, conformity, and persuasion. Effects of stress, wife beating and child abuse, and moral development.

92.219 Deviant Sexual Behavior and Substance Abuse 4 Q.H.

(Prereq. Intro. to Psychology)

An overview of crimes and problems in impulse control in which there is often no victim. Explores psychological origins and treatment of sexual disorders and substance abuse. Includes philosophical discussion of attitudes concerning issues such as homosexuality, availability of alcohol, and prohibition of drugs such as heroin. Review the literature on the effectiveness of behavior therapy's self-control methods.

Interdisciplinary Courses

93.110 FORTRAN Programming 4 Q.H.

(Prereq. One year college math)

Techniques for programming problems on any large computer. Emphasis is on general programming methods using the language of FORTRAN. A large number of example problems are presented in an effort to display the applicability of computers to a wide variety of professional activities. No prior computer experience is required.

93.111 Advanced FORTRAN Programming 4 Q.H.

(Prereq. 93.110)

Higher-level aspects of the FORTRAN language are considered. Topics covered include the use of software packages, the manipulation of large data arrays, processing of non-numeric information, magnetic tape operations, and data-file management. An introduction to systems analysis is presented, with emphasis on Monte Carlo and queuing simulation techniques.

93.112 Assembly Language Programming 4 Q.H.

(Prereq. Knowledge of some compiler language)

The unique programming concepts encountered in assembly language programming. Course content includes number system theory, internal machine representation of information, complement arithmetic, basic machine language programming, assembly language instructions; concepts of addressing, subroutine linkage, character manipulation, and floating- vs. fixed-point operations.

93.120 An Analysis of American Racism 4 Q.H.

A seminar in contemporary aspects of racism in America. Discusses the cycle by which racism in our institutions helps form our attitudes and the manner in which our attitudes, in turn, shape our institutions. Emphasis is on the practical, day-to-day aspects of racism, rather than the theoretical and historical.

93.125 COBOL Programming I 4 Q.H.

Fundamentals of computer programming in COBOL. Topics include elementary computer functioning, program organization, input/output operations, arithmetic and data-handling verbs, and program logic development through the use of flow charts. Storage and manipulation of large data files on magnetic tape are introduced. No prior computer experience is required.

93.126 COBOL Programming II 4 Q.H.

(Prereq. 93.125)

Higher-level aspects of the COBOL language are considered. Use of decision tables in developing program logic. Improving program efficiency. Error detection and minimization techniques. Bulk data storage in magnetic tape and disc files. Storing, merging, updating, sorting, and purging data files. Generating reports.

93.160 American Musical Theatre (Fall and Winter) 4 Q.H.

An interdisciplinary course, taught by the Departments of Drama and Music. The development of the American musical, from *The Black Crook* to *Hair* and *Jesus Christ Superstar*, as entertainment and as serious art form, through an examination of script, score, dance, and design. Works by Bernstein, Rodgers and Hammerstein, the Gershwins, Weill, Lerner and Loewe, and Cole Porter are examined. Guest lecturers, recordings, films, and live productions supplement the course.

93.162 Design and the Urban Environment 4 Q.H.

An introduction to the study of the urban environment, with special emphasis on its visual, social, psychological, and technical implications. Lectures, design projects and field work will include study of the Northeastern campus as well as Boston neighborhoods. Limited enrollment. Fall 1979: to be taught by visiting artist in residence.

93.171 Introduction to Science I 4 Q.H.

93.171 and 93.172 form a two-quarter sequence for nonscience majors, providing an interdisciplinary treatment of basic concepts of the natural sciences, such as energy, gravity, and the atom. The course will also examine the ways in which atoms combine to form the substances that comprise matter.

93.172 Introduction to Science II 4 Q.H.
(Prereq. 93.171)

Continuation of 93.171. Discusses life, cells, some of the cellular processes important to living things, and the origin of life on earth.

93.180 Physical Biochemistry 4 Q.H.
(Prereq. 18.136 or 93.151)

Physicochemical principles as they apply to biological processes. Topics to be covered will include chemical equilibria, reaction kinetics, basic thermodynamics, oxidation-reduction reactions, bioenergetics, macromolecules in solution, and transport. The approach will be quantitative, and problem solving as a tool for learning will be emphasized. Basic assumptions and limitations underlying principles will be explained; however, for the most part, rigorous derivations will be avoided. Applications to basic experimental techniques in biochemistry will be made by way of relevant biochemical examples.

93.185 Molecular Biology 4 Q.H.
(Prereq. 18.136 or 93.151)

Emphasizes experimental design and proof in macromolecular chemistry and genetics. Studies current theories of the detailed molecular mechanisms for the preservation, expression, and evolutionary development of biological information. Applications to general biological and health problems will be emphasized. A two-hour period each week will be devoted to problem solving, research "game playing," and model building.

93.190 Advanced Biochemistry Laboratory 4 Q.H.
(Prereq. 18.136 or 93.151)

An intense laboratory experience for advanced undergraduate and graduate students. Experiments will emphasize protein and nucleic acid chemistry.

93.230 Field Experience in Human Services I 4 Q.H.

Human Services students are required to fulfill two fieldwork placements during the last two years of their program. Placement consists of 150 hours on site and generally varies according to the student's interest. Examples of placement sites include community centers, nursing homes, vocational workshops, state and federal agencies for children, and recreational facilities. Experiences are supervised by University staff to maximize the students' learning opportunities.

93.231 Field Experience in Human Services II 4 Q.H.

(Prereq. 93.230 and senior status)

Continuation of 93.230.

Academic Calendar 1979-1980

September 1979

3	Monday	LABOR DAY. University closed.
4-7	Tuesday-Friday	Final examinations for Basic Colleges.
10-21	Monday-Friday	Division A vacation.
13	Thursday	FALL COMMENCEMENT
24	Monday	Beginning of 1979-1980 academic year. Upper-class registration for Divisions A and C. No Basic Colleges classes today.

October 1979

8	Monday	COLUMBUS DAY. University closed.
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November 1979

12	Monday	VETERANS' DAY. University closed.
22-25	Thursday-Sunday	THANKSGIVING DAY recess.

December 1979

10-14	Monday-Friday	Final examinations for Basic Colleges.
17-Jan. 1	Monday-Tuesday	CHRISTMAS vacation.

January 1980

1	Tuesday	NEW YEAR'S DAY. University closed.
4	Friday	Registration for Quarter Two, Class 1984, and new students admitted in January 1980.
7	Monday	Upperclass registration Divisions B and C.
15	Tuesday	MARTIN LUTHER KING, JR'S. BIRTHDAY. University closed.

February 1980

18	Monday	WASHINGTON'S BIRTHDAY. University closed.
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March 1980

17-21	Monday-Friday	Final examinations for Basic Colleges.
24-29	Monday-Saturday	Vacation period for all students in all colleges and schools. (Division B vacation).
31	Monday	Registration for Division A and C students and Division B seniors. Registration for freshmen (Quarter Three) at Boston Campus, Burlington Campus, and January freshmen (Quarter Two). Beginning of Spring Quarter. Beginning of Division B work period. No Basic Colleges classes today.

April 1980

21	Monday	PATRIOTS' DAY. University closed.
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May 1980

26	Monday	MEMORIAL DAY. University closed.
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June 1980

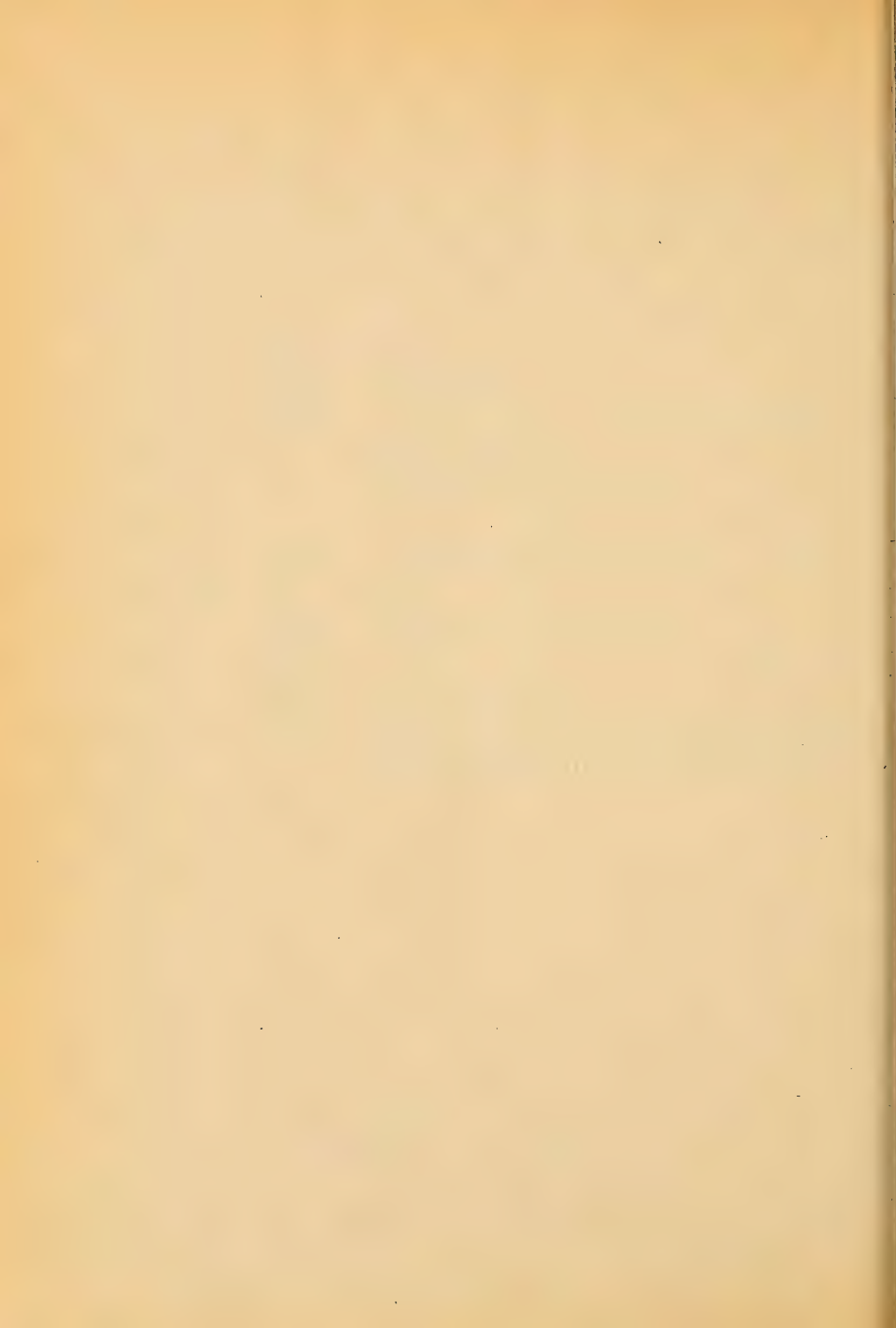
9-13	Monday- Friday	Final examinations for Basic Colleges.
15	Sunday	COMMENCEMENT.
16-20	Monday- Friday	Division A vacation.
23	Monday	Registration for Divisions B and D and January freshmen (Quarter Three). Beginning of Summer Quarter. Beginning of Division A work quarter. No Basic Colleges classes today.

July 1980

4	Friday	INDEPENDENCE DAY. University closed.
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September 1980

1	Monday	LABOR DAY. University closed.
2-5	Tuesday- Friday	Final examinations for Basic Colleges.
8-26	Monday- Friday	Division B vacation.
11	Thursday	FALL COMMENCEMENT.
29	Monday	Beginning of 1980-1981 academic year. Upper-class registration for Divisions B and C. Boston and Burlington freshmen complete their registration. No Basic Colleges classes today.



Graduate School of Business Administration 1979-80

**Northeastern
University
Boston, Massachusetts**

The MBA Program

The MBA Program offered by the Graduate School of Business Administration, Northeastern University, focuses upon the problem-solving and decision-making responsibilities of modern management and is aimed at providing broad-based preparation for careers in administration.

Recognizing the impact of business policy on society, the curriculum and teaching methods center around the development of basic skills and knowledge appropriate to administration, as well as an awareness of the ethical considerations inherent in managerial decision making. Although the case method of study is used extensively, a variety of teaching methods is employed that is consonant with particular course objectives.

The Graduate School of Business Administration supports Northeastern University's educational philosophy in its commitment to a combination of employment and academic learning. In an effort to meet the needs and schedules of graduate business students, the Graduate School of Business Administration offers a variety of program alternatives designed to allow flexibility in pursuit of the MBA degree and to encourage practical work experience. Graduate students may attend the MBA Program full time or part time according to their professional objectives and personal life styles.

The Graduate School of Business Administration catalog contains *current information* regarding the University calendar, admissions, degree requirements, fees, and regulations, and such information is not intended to be and should not be relied upon as a statement of the University's contractual undertakings.

Northeastern University reserves the right in its sole judgment to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures and standards, degree requirements, fees, and academic schedule whenever it is deemed necessary or desirable, including, without limitation, changes in course content, the rescheduling of classes, cancelling of scheduled classes and other academic activities and requiring or affording alternatives for scheduled classes or other academic activities, in any such case giving such notice as is reasonably practicable under the circumstances.

We at Northeastern will do our best to make available to you the finest education we can provide, the most stimulating atmosphere in which to learn, and the most congenial conditions under which you may enjoy the learning experience. But the quality and the rate of progress of your academic career is in large measure dependent upon your own abilities, commitment, and effort. You will be a full participant in an educational partnership. We will and, indeed, can only make the opportunities available to you; it is up to you to take advantage of them.

This is equally true with your career upon graduation. We cannot guarantee that you will obtain any particular job; that will depend upon your own skills, achievement, presentation, and other factors such as market conditions at that time. Similarly, in many professions and occupations there are increasing requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These may change during the period of time when you are at Northeastern and they may vary from state to state. While we will be ready to help you find out about these requirements and changes, it is your responsibility to initiate the inquiry because we cannot know what your expectations and understandings are unless you tell us.

In brief, what we are saying to you is that we are here to offer you educational opportunities and choices and to assist you in finding the direction in which you want to steer your educational experience. But you are a partner in this venture with an obligation and responsibility to yourself.

Equal Opportunity Policy

Northeastern University is committed to providing equal opportunity for all. In matters involving admission, registration, and official relationships with students — including evaluation of academic performance — the University insists on a policy of nondiscrimination. Northeastern is also an equal opportunity employer. It is institutional policy that there shall be no discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or on the basis of being a handicapped but otherwise qualified individual. In addition, Northeastern takes affirmative action in recruitment of students and employees. Inquiries concerning our equal opportunity policies may be referred to the University Affirmative Action officer and/or the Title IX coordinator.

The person responsible for coordinating compliance efforts and for investigating any complaints of discrimination is Dean Ellen Jackson, 175 Richards Hall, Telephone 617-437-2133.

Tuition and Regulations

Tuition rates, all fees, rules and regulations, courses and course content are subject to revision by the President and Board of Trustees at any time.

Delivery of Services

The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing educational or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, which causes include, without limitation, power failure, fire, strikes by University employees or others, damage by the elements and acts of public authorities. (The University will, however, exert reasonable efforts, when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities or performance, but its inability or failure to do so shall not subject it to liability.)

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The University

Founded in 1898, Northeastern University is a privately endowed non-sectarian institution of higher learning located in Boston, Massachusetts. By special enactment, the State Legislature has given the University general degree-granting powers. The University is governed by the Northeastern University Corporation, which is composed of nearly 180 distinguished business and professional men and women.

From its beginning, Northeastern University has had as its dominant purpose the meeting of current educational needs in distinctive and serviceable ways. The University has sought to pioneer new areas of educational service rather than to duplicate the programs of other institutions.

One of Northeastern's distinctive features is its Cooperative Plan of Education, initiated by the College of Engineering in 1909 and subsequently adopted by the Colleges of Business Administration (1922), Liberal Arts (1935), Education (1953), Pharmacy (1962), Nursing (1964), Boston-Bouv  College (1964), Criminal Justice (1967), and Lincoln College's daytime Bachelor of Engineering Technology program (1971). The Cooperative Plan enables students to gain valuable practical experience as an integral part of their college programs and also helps provide the means by which they may partially defray college expenses. The Plan has been extended to the graduate level in business administration, engineering, actuarial science, rehabilitation administration, professional accounting, and law.

Ten graduate and professional schools offer both day and/or evening programs: the Graduate School of Actuarial Science; the Graduate School of Arts and Sciences; the Graduate School of Boston-Bouv  College; the Graduate School of Business Administration; the Graduate School of Criminal Justice; the Graduate School of Education; the Graduate School of Engineering; the School of Law; the Graduate School of Pharmacy and Allied Health Professions; and the Graduate School of Professional Accounting.

In the field of adult education, programs of study have been developed to meet a variety of needs. Evening courses and adult day courses lead to the bachelor's degree.

Northeastern University is authorized under federal law to enroll nonimmigrant alien students.



The Graduate School of Business Administration

The Graduate School of Business Administration is one of ten graduate and professional schools within Northeastern University. Established in 1952, the Graduate School continues to build and maintain a strong professional business tradition. Both the graduate and undergraduate programs are fully accredited by the American Assembly of Collegiate Schools of Business and are staffed by approximately 70 full-time faculty members and supported by numerous adjunct professors with particular business expertise.

Since its founding the Graduate School has had a clear professional objective — “to develop as business administrators men and women who are practicing business administration in public and private organizations.” The program is broad in concept and is aimed at preparing a student for a career in business administration rather than for a particular position. Emphasis has always been placed on basic administrative skills and knowledge rather than specialized functional techniques, and practical work experience is considered to enhance and reflect the academic curriculum.

Northeastern University's Graduate School of Business Administration offers a variety of programs to meet the needs and schedules of graduate business students. The following pages outline these programs of study. For those interested in pursuing an MBA degree on a full-time basis, Northeastern offers two program alternatives: 1) a 21-month program which includes a 6-month working internship; 2) a 2-year program with administrative or teaching assistantship opportunities. Individuals who wish to continue their full-time job responsibilities and complete an MBA degree on a part-time basis may consider either an evening program of study or the Executive MBA Program.

All programs leading to the degree of Master of Business Administration have the same required courses and elective offerings. The curriculum provides a foundation in the business functional skills through courses in accounting, finance, marketing, management science, operations management, and human resources, and allows for individual specialization or individual broadening through elective courses.

Management Intern Program

The Management Intern Program is an outgrowth of Northeastern University's longstanding commitment to cooperative education. This intensive 21-month program involves integration of classroom studies and professional work experience. MBA Intern students alternate periods of full-time attendance in the Graduate School of Business Administration with a period of full-time employment in business, industry, or government.

This educational method enables students to gain valuable practical work experience as an integral part of their graduate business schooling and also provides a means by which they may contribute to the financing of their education.

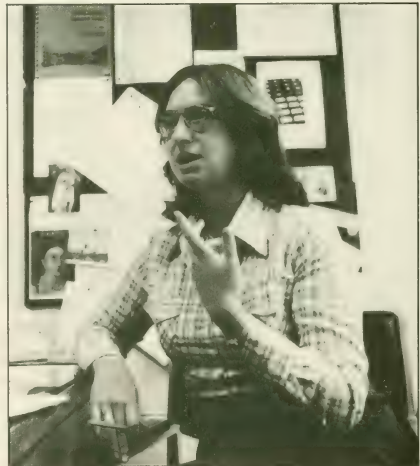
Management Intern students are admitted as full-time MBA candidates in January and June of each year. Placements occur 6 months later (June or January) after completion of 12 required courses. The 6-month paid intern work assignment allows students the opportunity to apply concepts learned in the classroom and to test the realities of career options. The final academic period is 9 months in length and consists of advanced required courses and elective courses which may be chosen across several fields or concentrated in a single area.

The intent of the Management Intern Program is to provide meaningful work experiences for students. Due to economic, academic, and individual variables, the University cannot guarantee placement. The Graduate School of Business Administration does, however, have a full-time experienced staff to assist intern students and over the past several years, placement results have been excellent.

The 21-month intern sequence is noted on the following page. For the first 3 academic quarters the student carries 18 quarter hours of credit; for the final 2 academic quarters the student carries 15 quarter hours of credit. As this is an intensive program, intern students are strongly discouraged from working part-time during the academic quarters.

The Management Intern Program blends 15 months of academic study with 6 months of coordinated professional work experience. This combination of theory and practice, evaluated by faculty and employer, provides the intern student with the opportunity for excellent preparation for a career in administration.

	June Entrance	January Entrance
First Year		
Summer quarter	Class	
Fall quarter	Class	
Winter quarter	Work	Class
Spring quarter	Work	Class
Second Year		
Summer quarter	Class	Work
Fall quarter	Class	Work
Winter quarter	Class	Class
Spring quarter		Class
Summer quarter		Class



Twenty-One Month Sequence

Quarter I	41.811	Financial & Managerial Accounting
	41.812	Control I
	43.811	Marketing Management I
	45.815	Behavioral Concepts
	45.816	Organizational Behavior I
Quarter II	49.901	Managerial Economics I
	44.811	Financial Management I
	44.812	Financial Management II
	45.805	Operations Management I
	45.806	Operations Management II
Quarter III	49.932	Introduction to Computer Applications
	49.902	Quantitative Analysis I
		Internship Work Period
Quarter IV		Internship Work Period
Quarter V	43.812	Marketing Management II
	41.813	Control II
	49.903	Quantitative Analysis II
	●	Elective
	●	Elective
Quarter VI	●	Elective
	45.834	Policy: Environmental Analysis
	45.836	Policy: Formulation of Strategy
	49.909	Managerial Economics II
	●	Elective
Quarter VII	●	Elective
	45.817	Organizational Behavior II
	45.837	Policy: Implementation of Strategy
	●	Elective
	●	Elective
	●	Elective

Two-Year Full-Time Program

The two-year, full-time program offers students the opportunity to pursue an MBA degree through continuous study by attending classes during the day and/or evening. Although this program does not include an internship placement, students enrolled in the full-time program are eligible for graduate assistantships. Most students enroll in four or five courses each quarter, although some may take six courses and attend classes in the summer quarter in order to hasten program completion. The flexibility of this program enables MBA candidates to complete degree requirements in less than or more than two years, depending on their personal objectives.



Graduate Assistantships

At the present time, approximately 35 percent of the students enrolled in the full-time program are employed on a part-time basis by the College of Business Administration as administrative or teaching assistants.

Administrative assistants may assist staff or faculty in University administrative responsibilities, for example, counseling, college recruiting, curriculum scheduling, and application processing.

Teaching assistants may instruct classes, formulate and proctor examinations, and counsel students in accounting, finance, marketing, statistics, or introduction to business.

Administrative and teaching assistants are expected to devote 20 hours per week to assigned duties. Appointments are made for each academic year. Teaching assistants receive a stipend of \$3,650 for three academic quarters, while administrative assistants receive \$3,000 for the three quarters. A limited number of assistantships are available. Those students not awarded teaching or administrative assistantships may be considered for tuition assistantships, which include full tuition remission for 10 hours of work per week.

Graduate assistants are expected to devote considerable time and energy to their responsibilities in addition to carrying a full academic work load. For this reason, only students with outstanding undergraduate academic records should consider applying. A personal interview may be required in order for an assistantship application to be evaluated.

An individual offered an assistantship position must give formal notification of acceptance of the award by April 15 for a September starting date.

Two-Year Sequence

Quarter I	41.811	Financial & Managerial Accounting
	45.815	Behavioral Concepts
	45.816	Organizational Behavior I
	49.901	Managerial Economics I
	49.902	Quantitative Analysis I
Quarter II	41.812	Control I
	43.811	Marketing Management I
	49.903	Quantitative Analysis II
	45.805	Operations Management I
	49.932	Introduction to Computer Applications
Quarter III	43.812	Marketing Management II
	44.811	Financial Management I
	45.806	Operations Management II
	●	Elective
	●	Elective
Quarter IV	41.813	Control II
	44.812	Financial Management II
	49.909	Managerial Economics II
	●	Elective
	●	Elective
Quarter V	45.834	Policy: Environmental Analysis
	45.836	Policy: The Formulation of Strategy
	●	Elective
	●	Elective
Quarter VI	45.817	Organizational Behavior II
	45.837	Policy: The Implementation of Strategy
	●	Elective
	●	Elective

Part-Time Program

Part-time students may continue their full-time employment while acquiring the background, skills, and knowledge that can help them advance their careers in administration.

These students normally take two courses per quarter; classes are scheduled so that part-time candidates may attend both courses in the same evening. Part-time students have the advantage of attending classes in the late afternoon and evening to learn the theory behind the practical applications of their employment.

It is possible for the part-time degree candidate to complete this program in three to four years, depending upon whether or not course work is taken during the summer quarter. All courses required for the MBA may be completed at the Boston or Burlington campuses.

Students maintaining satisfactory academic standing may petition the Director of the Graduate School for permission to take more than two courses per quarter.



Part-Time Sequence

Quarter 1	45.815 45.816	Behavioral Concepts Organizational Behavior I
Quarter 2	41.811 49.901	Financial and Managerial Accounting Managerial Economics I
Quarter 3	41.812 49.902	Control I Quantitative Analysis I
Quarter 4	49.903 49.932	Quantitative Analysis II Introduction to Computer Applications
Quarter 5	43.811 44.811	Marketing Management I Financial Management I
Quarter 6	43.812 44.812	Marketing Management II Financial Management II
Quarter 7	45.805 49.909	Operations Management I Managerial Economics II
Quarter 8	45.806 ●	Operations Management II Elective
Quarter 9	45.817 ●	Organizational Behavior II Elective
Quarter 10	41.813 ●	Control II Elective
Quarter 11	45.834 ●	Policy: Environmental Analysis Elective
Quarter 12	45.836 ●	Policy: The Formulation of Strategy Elective
Quarter 13	45.837 ●	Policy: The Implementation of Strategy Elective
Quarter 14	● ●	Elective Elective

Executive MBA Program

The Executive MBA Program offers an intensive 18-month course of study leading to the degree of Master of Business Administration. Classes meet all day on alternating Fridays and Saturdays and during three one-week residency periods. All classes and lodging are held at the Copley Plaza Hotel, centrally located in Boston and within walking distance of the Northeastern University main campus. During the final residency week, participants in the Executive MBA Program fly to New York and Washington for conferences with business and government leaders.

Especially designed for the middle- and upper-level manager who desires to maintain full-time employment while pursuing advanced management study, the program is intended for only the most highly motivated individuals. Eligible candidates will have had responsibility for a significant cost or profit center in a large organization, will have been in a key management position in a smaller company, or will have held important staff assignments.

Most, though not all, candidates are sponsored by their employers. The sponsoring organizations are expected to assume program costs and to release their participants from work responsibilities on the days that classes are held. The cost is \$2,450 per quarter for tuition and fees, room and board, textual materials, and travel to New York and Washington, plus \$1,500 upon acceptance into the program (total \$13,750).

The Executive MBA Program begins every January with a class of approximately 30 participants. Applications received throughout the year are reviewed on a rolling admissions basis.

For more information, including the Executive MBA catalog and application, please contact:

Executive MBA Program
Graduate School of Business
Administration
204 Hayden Hall
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115
Telephone: 617-437-2717



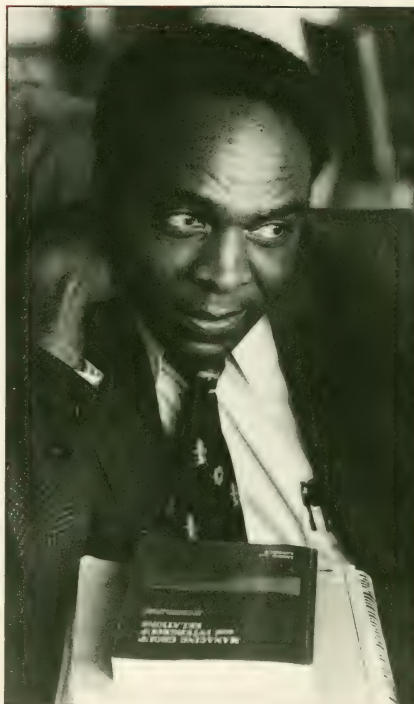
Program for Advanced Study in Business Administration

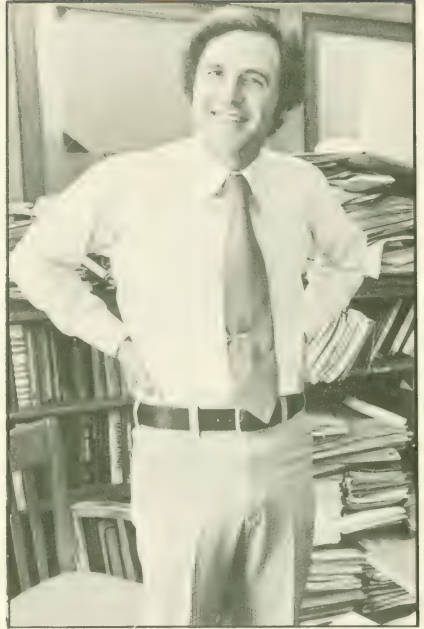
The Program for Advanced Study in Business Administration has been instituted through the Graduate School of Business Administration. Its main objective is to provide the opportunity for advanced work in business administration to meet the needs of a rapidly changing environment. Individuals holding an MBA or its equivalent are eligible for the program.

Specially tailored to meet the needs of the individual student, this program consists of a five-course sequence.

Upon satisfactory completion of these courses, the student is awarded the Certificate of Advanced Study in Business Administration.

For further information and application materials, contact:
Program for Advanced Study in Business Administration
Graduate School of Business Administration
205 Hayden Hall
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115
Telephone: (617) 437-2714





Student Profiles

The MBA student body is composed of students from numerous and diverse backgrounds. The wide representation is due in part to the variety of orientations within the programs of the Graduate School of Business Administration.

Management Intern Program

Two intern classes are admitted each year with approximately 35 to 50 students in each class. The program is designed for the individual with limited business experience or who desires to change career direction. The student profile is as follows:

- Average age 23 years
- Age range 21 to 30 years
- Undergraduate major
 - 50% liberal arts
 - 25% science and engineering
 - 25% business
- Students with work experience 45%

Two-Year Full-Time Program

This program offers an alternative to the intern program for those individuals who do not seek business experience within the academic curriculum. Most full-time students have had work experience, although often limited. Many students look to this program as a means of establishing a more directed career path into the business area of their choice. Approximately 60 students are accepted each year, starting each September. Assistantships which include tuition remission and/or a stipend are awarded to approximately 30%-40% of this class. The student profile is as follows:

- Average age 26 years
- Age range 21 to 40 years
- Undergraduate major
 - 60% liberal arts
 - 20% science and engineering
 - 20% business
- Students with work experience 80%

Part-Time Program

The students enrolled in the part-time program are the most diverse of all those enrolled in the MBA program. These students are highly motivated individuals, most of whom maintain full-time jobs while pursuing an MBA degree. Many part-time students are sponsored by their employers and seek to improve their performance on the job. The student profile is as follows:

- Average age 28 years
- Age range 22 to 50 years
- Undergraduate major
 - 50% liberal arts
 - 30% science and engineering
 - 20% business
- Students with work experience 95%

Executive MBA Program

Participants in the Executive MBA Program are among the oldest and most experienced MBA students. They include middle- and senior-level managers and represent a variety of fields, industries, and organizations. A new class is admitted every January with approximately 30 class members who progress through the 18-month program as a group.

- Average age 38 years
- Age range 28 to 54 years
- Work experience, range 7 to 27 years
- Work experience, average 12 years

Employment Profile



It is difficult to summarize the employment profile of the graduating classes of the Graduate School of Business Administration. Individual goals of graduating students are varied and include such diverse fields as arts management, health care administration, and small business entrepreneurial activities, as well as the more traditional career paths with major national and international corporations. The majority of Northeastern intern and full-time students who begin their business careers upon graduating are employed in financial/accounting and marketing functions, mainly by major industrial corporations and the banking community.

Starting salaries are also quite varied and generally depend upon the individual's previous work experience and undergraduate major. Presently the majority of salary offers to graduating MBA students fall between \$18,000 and \$22,000. Salaries have ranged in recent years between \$13,000 and \$30,000.

Management intern students often return to the business organization at which they were employed during their six-month internships. Starting salaries for these students tend to be higher than for full-time students with comparable qualifications.

Part-time MBA graduates are generally employed throughout their progress toward the degree. Therefore, the salary impact of the degree is often difficult to measure. However, most graduates who complete the MBA program as part-time students report significant gains in earnings.

The Graduate School of Professional Accounting



M.S. in Accounting Program

The College of Business Administration offers a Master of Science in Accounting degree for full-time students through the Graduate School of Professional Accounting. The program is designed to help liberal arts and other nonaccounting majors prepare for a career in public accounting and for the CPA Examination.

This concentrated 15-month program incorporates a 3-month internship with a leading public accounting firm. The first half of the academic curriculum is designed to prepare students for their internships. During their internships students can gain valuable practical experience in the field which is of use when they undertake the second half of the program. In addition to the opportunity for valuable practical experience the internship can also provide significant financial support. In the past, student earnings for the 3-month internship have averaged well over \$3,000.

Classes are held at Northeastern University's Boston campus. Distinguished visiting professors augment the College of Business Administration faculty members. In addition, two of the professional courses, Auditing and Taxes, are taught by partners of leading public accounting firms.

Tuition is \$1,550 for each of four academic quarters. New classes begin in mid-June of each year.

For further information and application forms, please contact:

Graduate School of Professional
Accounting
206 Hayden Hall
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115
Telephone: (617) 437-3244

Program of Study

Quarter I	41.810	Accounting Principles
	41.820	Accounting Problems I
	45.812	Organizational Behavior
	41.840	Cost Accounting Theory and Problems
Quarter II	41.850	Auditing Theory and Practice
	41.860	Federal Income Tax Accounting
	41.870	Accounting Problems II
	45.910	Business and Society
Quarter III	Internship employed in a CPA Firm	
Quarter IV	41.960	Accounting Problems III
	43.850	Marketing
	45.920	Operations Management
	49.920	Managerial Economics
Quarter V	41.890	Contemporary Accounting Theory
	44.830	Management of Financial Resources
	49.930	Business Law
	45.980	Business Policy

Center for Management Development

The Center for Management Development, sponsored by the College of Business Administration, offers programs designed to provide professional growth for middle and upper managers. Two programs, the Management Development Program and The Management Workshop, are scheduled three times per year. Participants are sponsored by their employers in both programs. The Center also designs and conducts special programs for a wide range of business organizations.

For further information about these programs, please contact:
Center for Management Development
212 Hayden Hall
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115
Telephone: (617) 437-3272



Management Development Program

The Management Development Program is a graduate-level course in business, designed for experienced managers who have had responsibility for a major task, function, department, division, or independent enterprise. Its general aim is to improve the manager's overall performance.

There is a choice of three six-week residency sessions, two of which extend over five months (October through February or January through May) while the third is a four-month period (March through June). This approach offers a tested alternative for organizations which find it difficult to release a key individual for lengthy periods of time. A certificate is awarded to all participants who successfully complete the program.

Residential facilities and classrooms for the program are at the Andover Inn and Peabody House, both on the campus of Phillips Academy in suburban Andover, Massachusetts.

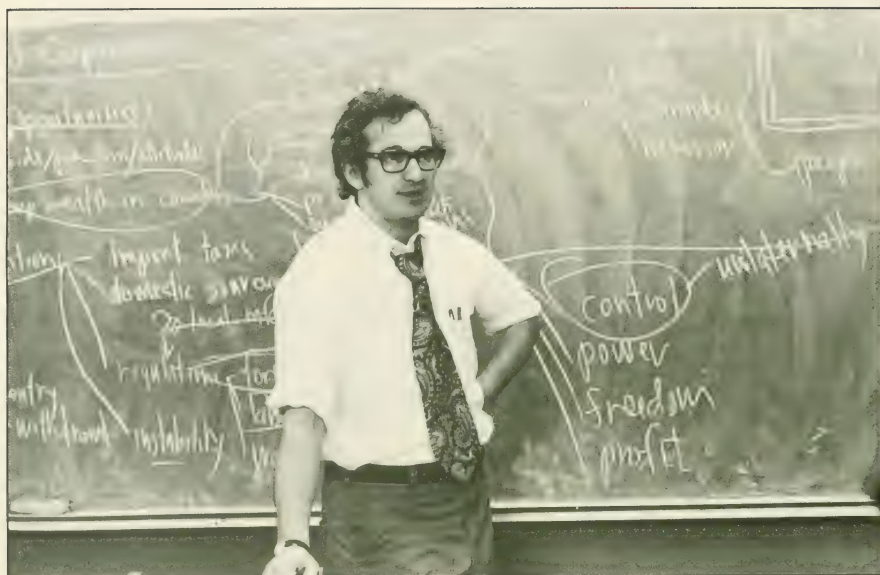
The fee of \$3,950 includes tuition, books, materials, meals, and lodging.

The Management Workshop

The Management Workshop is designed chiefly for middle managers who have demonstrated the potential for promotion into higher organizational levels. The workshop provides a comprehensive outline of the major areas of business through graduate-level courses in organizational behavior, financial analysis and control, operations management, marketing, and economic forecasting. Upon successful completion of the program, six graduate credits will be given.

Classes in four subject areas are scheduled for each of twelve Fridays from 8:30 a.m. to 5:00 p.m. at Northeastern's Henderson House Conference Center in Weston, Massachusetts. There is a choice of three sessions per year, beginning in September, January, and March.

The cost of the Management Workshop is \$1,500, including tuition, instructional material, and meals.



Master of Business Administration Curriculum

Candidates entering the MBA program after January 1, 1977 must fulfill the requirement of 28 graduate business courses, consisting of 20 required courses and 8 electives. All courses carry 3 quarter hours of graduate credit unless otherwise specified. A total of 84 quarter hours of credit are required for the Master of Business Administration degree.

MBA students who began the program before January 1, 1977 may either fulfill the degree requirements established at the time of their enrollment (24 graduate business courses) or follow the present 28-course program. The recommended course sequence for those enrolled in the 24-course program may be obtained from the Graduate School of Business Administration.

Students entering the program with previous business education may apply for a maximum of ten course waivers. However, most undergraduate business programs will qualify a candidate for no more than four to six waivers.

The prerequisites for courses are listed in the course descriptions. These are guidelines to help the student maximize learning and performance but may be waived with the permission of the Director of the Graduate School or the professor of the specific course.

The Graduate School of Business Administration strongly recommends that students take their elective courses in the second half of the program or after completing a majority of the required courses. As elective offerings are continually being revised to conform to the interests of the faculty and current student body, some electives may not be offered every year while others may be added to the curriculum. Elective courses may be selected from other graduate programs at Northeastern University with the permission of the director of the appropriate program and the Director of the Graduate School of Business Administration.

Courses offered in the Graduate School are listed on the pages that follow. For easy identification they are divided into area groupings. Required courses are indicated in color and elective courses are indicated in black type.

Explanation of Course Numbers

39.000	Business Communications
41.000	Managerial Economics
41.000	Financial and Managerial Accounting
43.000	Marketing Management
44.000	Financial Management
45.000	Business Law
	Business Policy
	Health Care Administration
	Management of Human Resources
	Operations Management
	Small Business Management
46.000	International Business
48.000	Management of Transportation and Distribution
49.000	Management Science
	Managerial Economics

Financial and Managerial Accounting

41.811	Financial and Managerial Accounting
41.812	Control I
41.813	Control II
41.817	Fiscal Planning, Budgeting, and Control of Health Care Institutions
41.818	Intermediate Accounting I
41.819	Intermediate Accounting II
41.822	Auditing
41.823	Reimbursement Policies
41.862	Tax Factors in Business Decisions

Management of Human Resources

45.815	Behavioral Concepts
45.816	Organizational Behavior I
45.817	Organizational Behavior II
39.835	Labor Economics
45.823	Career Planning and Development
45.824	Organizational Behavior in a Nonprofit Environment
45.840	Managerial Styles and Sex Stereotypes
45.848	Organizational Development I
45.849	Organizational Development II
45.867	Organizational Change
45.882	Management Consulting
45.951	Executive Development
45.971	Personnel Management
45.972	Labor Relations
45.993	Labor Law

Quantitative Methods

49.902	Quantitative Analysis I
49.903	Quantitative Analysis II
49.908	Mathematics for Managerial Decisions
49.910	Decision Analysis

Computer and Information Systems

49.932	Introduction to Computer Applications
49.918	Information Theory and Systems
49.933	Management Information Systems
49.935	Computer Applications in Management Science

Financial Management

44.811	Financial Management I
44.812	Financial Management II
44.814	International Financial Management
44.816	The Management of Financial Resources
44.818	Working Capital Management
44.820	Consumer Affairs
44.825	Investment Banking
44.826	Bank Management
44.827	Portfolio Management
44.901	Finance III — Advanced Financial Management
44.921	Investment Analysis
44.924	Mergers and Acquisitions
44.926	Public Utility Regulation and Finance
44.935	Management of Financial Institutions

Marketing Management

43.811	Marketing Management I
43.812	Marketing Management II
43.814	Consumer Behavior
43.816	Workshop in Negotiating
43.878	Competitive Strategy
43.910	International Marketing
43.925	Sales Management
43.926	Advertising Management
43.931	Marketing Research I
43.932	Marketing Research II
43.934	New Product Development
43.936	Retail Management
43.937	Marketing Management of Public and Nonprofit Enterprises
43.941	Industrial Marketing

Operations Management

- 45.805 Operations Management I
- 45.806 Operations Management II
- 45.809 Advanced Operations Management
- 45.811 Purchasing & Materials Management
- 45.813 Operations Management in the Service Sector
- 45.833 Operations Management in the Health Care System
- 45.902 Planning and Controlling Manufacturing Operations
- 45.911 Manufacturing Policy

Managerial Economics

- 49.901 Managerial Economics I
- 49.909 Managerial Economics II
- 39.9G1 Economics of the Labor Market and Labor Force
- 39.9T1 Public Policy and Finance
- 39.9T5 Capital Markets
- 49.911 Public Policies toward Business
- 49.912 Economics of International Business

Business Policy

- 45.834 Policy: Environmental Analysis
- 45.836 Policy: The Formulation of Strategy
- 45.837 Policy: The Implementation of Strategy
- 45.830 Formal Planning Systems
- 45.843 Environmental Pressures and the Corporation
- 45.844 The Status of the Free Enterprise System in the United States
- 45.969 Government and Business

Business Law

- 45.991 Business Law — Law of Contracts, Agency, and Sales
- 45.992 Law of Business Organizations and Negotiable Instruments
- 45.993 Labor Law
- 45.996 Consumer Law

Business Communications

- 39.9R3 Writing for the Professions

Health Care Administration

- 41.817 Fiscal Planning, Budgeting and Control of Health Care Institutions
- 41.823 Reimbursement Policies
- 45.833 Operations Management in the Health Care System
- 45.975 Introduction to Health Care Systems
- 45.977 Information Systems for Health Care Facilities
- 45.981 Human Resource Management in Health Organizations
- 45.982 Marketing and Public Affairs for Health Organizations
- 45.984 Health System Planning and Regulation
- 49.981 Health Services Research

International Business

- 43.910 International Marketing
- 44.814 International Financial Management
- 45.843 Environmental Pressures in the Corporation
- 46.810 Managing the Multinational Enterprise

Small Business Management

- 45.829 New Ventures: A Career Choice
- 45.965 Management of Small Business Enterprises
- 45.968 Management of New Enterprises

Management of Transportation and Distribution

- 48.801 Transportation Policy and Regulation
- 48.860 International Transportation and Distribution Management
- 48.901 Corporate Transportation and Distribution Management
- 48.905 Urban Transportation
- 48.906 Management of Transportation Enterprises
- 48.907 Seminar in Transportation and Distribution Management

Independent Study

- 45.997 Special Studies in Business Administration (1 q.h.)
- 45.998 Special Studies in Business Administration (2 q.h.)
- 45.999 Special Studies in Business Administration (3 q.h.)

Description of Courses

39.9R3 Writing for the Professions

This course is designed as a means of increasing ability in written communication through extensive practice in the forms of business writing: letters, memoranda, and grammatical skills as well as practice in the various forms of writing utilized both in the students' academic program and in their professional careers. Where possible, speakers from business and industry will be invited to address the class on various problems encountered in management and executive level communications. Several short (500 word) papers as well as one or two longer reports will be required. Prep. none.

39.835 Labor Economics

Includes the economics of wage determination, impact of unions on wages and inflation, the economics of full employment and unemployment, and private and public remedial policies; the labor force, governmental labor legislation, security, unionism, and democracy. Prep. 15 q.h. of grad. credit.

39.9G1 Economics of the Labor Market and Labor Force

Labor force measurement and determinants, the changing labor market role of women; microeconomic analysis of labor supply and demand, varieties of labor markets and their functioning; minimum wages; wage structures and differentials, labor allocation and migration; union impact on wage levels and structures; macro wage employment determination, macro wage price problems, income policies. Prep. 49.909.

39.9T1 Public Policy and Finance

Techniques of fiscal policy, fiscal policy norms, public sector debt; tax policy; federal tax reform; the conflict between social implications of price stabilization and full

employment; public expenditure policy and the interrelationship between monetary and fiscal controls. Prep. 49.909.

39.9T5 Capital Markets

Primary courses of savings and demand for financial assets; role of financial intermediaries; banking system and government lending agencies. Demand for funds and real investment — mortgage, corporate and government securities markets; interdependence of rate structures. Flow of funds data in relation to national income accounts. Prep. 49.909.

41.811 Financial and Managerial Accounting

An introduction to the accounting system and the techniques of recording, summarizing, and reporting the flow of financial information through the entity concerned. The course offers an understanding of the information flow process plus the necessary techniques for analysis and evaluation of the firm's potential in the light of historical data. Prep. none.

41.812 Control I

An examination of the role of accounting in controlling the operation of the business entity and the relation of cost and volume to profits. Decision-making techniques using accounting information are stressed. The use of programmed budgets as a planning, motivating, coordinating, and control device is emphasized. Prep. 41.811 or equivalent.

41.813 Control II

The study of short- and long-range programs and their integration within the control mechanism; the enhancement of goal setting, achievement, motivation, and evaluation. Primary emphasis is on the decentralized organization with multiple operating divisions. Prep. 41.812 or equivalent.

41.817 Fiscal Planning, Budgeting, and Control of Health Care Institutions

Includes the following aspects of traditional and emerging health care institutions: fiscal organizations, short- and long-range financial planning, impact of government regulations, financial reporting, cash flow analysis and forecasting, third party reimbursement, and capital financing. Prep. 41.813, 44.811, 44.812, or permission of instructor.

41.818 Intermediate Accounting I

An intensive investigation into modern accounting problems and their solutions using the recommended guidelines from the various authoritative bodies. Matters of classification and valuation are stressed in examining various alternative solutions. Prep. 41.811.

41.819 Intermediate Accounting II

An examination of various financial accounting and reporting problems. Development of accounting theory is stressed in the analysis of alternative treatments and procedures. Among the specific areas covered are: intangible assets, liabilities, stockholders equity, and current value accounting. Prep. 41.818.

41.822 Auditing

An introduction to the attest function of the public accountant. Matters of professional conduct and ethics, legal liability, generally accepted auditing standards, internal control, statistical sampling, audit reports, and the impact of electronic data processing on auditing are covered. Although a conceptual approach is employed, auditing procedures as they relate to specific areas are covered. Prep. 41.812 or equivalent.

41.823 Reimbursement Policies

Examines rate setting and reimbursement policies and their effect on health institutions' cash flow and fiscal position. Prep. 41.817 or permission of instructor.

41.862 Tax Factors in Business Decisions

A survey of the Internal Revenue Code and its implications for choice of organizational form, corporate reorganizations, compensation policies, and foreign business operations. Mergers and acquisitions and the management of depreciable property are examined in the light of decisions made by the Internal Revenue Service and the tax courts. Emphasis is on discussion and research into corporate income tax problems that affect business decisions. Prep. 15 q.h. of grad. credit.

43.811 Marketing Management I

The objectives of Marketing Management I and II are twofold: (1) to provide the student with a comprehensive understanding of basic marketing functions, institutions, and concepts; and (2) to develop the student's ability to analyze and make recommendations about business problems that involve the creation, distribution, and sale of goods and services. Marketing Management I emphasizes the definition of marketing problems, demand analysis, consumer analysis, and marketing research. Prep. none.

43.812 Marketing Management II

A continuation of Marketing Management I, with emphasis on the formulation and implementation of marketing strategy. Emphasis is placed on product policy, channels of distribution, pricing, advertising, personal selling, and the development of integrated marketing programs of action. Prep. 43.811.

43.814 Consumer Behavior

Development of an understanding of consumer attitudes and behavior processes. Various economic and behavioral models of consumer behavior are examined and evaluated as bases for the planning and evaluation of marketing strategies. The method of instruction includes text, readings, and project. Prep. 43.811.

43.816 Workshop in Negotiating

Objective is to improve the students' understanding of the negotiations process and their ability to plan and conduct negotiations effectively. Class activities involve readings, lectures and discussions, as well as numerous case discussions and live and videotaped role-play negotiation exercises. Prep. 43.812 and 45.816 or permission of instructor.

43.878 Competitive Strategy

This course is the capstone course for graduate students emphasizing the marketing area in their studies. The course pulls together into a cohesive whole the various functional, institutional, and strategic elements which comprise marketing and to which the student has been exposed in the previous course work. Prep. 43.812.

43.910 International Marketing

Objective is to develop an understanding of: (1) the opportunities and challenges facing the international marketing executive; (2) the decision-making process in marketing goods abroad; and (3) the environmental forces — economic, cultural, and political — affecting the marketing process and acting as constraints on the development of marketing strategies abroad. Lectures, discussions, reports, and cases. Prep. 43.812.

43.925 Sales Management

Designed to help the student develop both the understanding and the decision-making skills necessary to build and maintain an effective sales organization. Cases and readings are used which examine the strategic and operating problems of the sales manager. Major topic areas are: (1) the selling function, (2) sales management at the field level, (3) the sales executive, and (4) sales and marketing management. Prep. 43.812 or permission of the instructor.

43.926 Advertising Management

Administration of complete advertising program. Case study method is used to explore role of advertising in the marketing mix, budgeting, media strategy, planning, coordinating advertising with promotion, working with client or agency, and social responsibility of advertisers. Prep. 43.812.

43.931 Marketing Research I

Major methods of marketing research are discussed. Emphasis is placed on research design issues — sampling, data collection procedures, and questionnaire construction — rather than on data analysis procedures. Sources of error in surveys are also

examined in detail along with the appropriate methodological techniques designed to reduce their magnitude. Surveys are evaluated in terms of their ability to provide quality information. Prep. 43.811 and 49.902.

43.932 Marketing Research II

This course focuses on various statistical methods of design and analysis in marketing research. Among the topics discussed are nonparametric statistics, experimental design, correlation and regression analysis, multiple discriminant analysis, and factor analysis. Canned statistical programming routines will be used with actual survey data to illustrate the application of the methods discussed. This course may be taken independently of 43.931. Prep. 43.811 and 49.902.

43.934 New Product Development

The importance of new products to the survival and prosperity of firms increases as product life cycles become shorter, technology, competition, and consumer tastes change, and operating costs increase. For most firms, coping with the problems of environmental change through modification of the product line is vital and difficult. This seminar will have as a primary concern the examination and analysis of some of the problems firms face in directing and managing their new product development activities. Prep. 43.812.

43.936 Retail Management

Examines selected major strategy problems facing large-scale food and general merchandise distributors; selecting store locations; determining merchandising and promotional policies; and formulating long-range plans. Cases and issues are explored from the viewpoint of the management of prominent supermarket, department store, and discount retailers. Designed primarily for students interested in retailing and those concerned about the role of mass distributors in the marketing of consumer goods. Prep. 43.812.

43.937 Marketing Management of Public and Nonprofit Enterprises

This course examines the unique characteristics of marketing management in public and nonprofit enterprises. Multiple objectives and performance evaluation are analyzed and their marketing implications are explored. Political interactions and considerations receive special emphasis. Differences in the content of marketing decision making between public and private

firms are studied. The method of instruction includes methodological lectures, case studies, readings, and a project. Prep. 43.812.

43.941 Industrial Marketing

The problems of industrial concerns in marketing products and services to industrial, business, and organizational customers. Emphasis is placed on determining customers' needs and on developing programs to satisfy these needs. Topics include the roles and responsibilities of the marketing executive engaged in industrial distribution, advertising, and research, as well as roles and responsibilities of industrial salesmen, sales supervisors, and selling agents. Prep. 43.812.

44.811 Financial Management I

This course and its required sequel, 44.812, acquaint students with concepts, practices, and procedures of financial management and offer training in analytical approaches helpful in making wise decisions affecting the flow of funds within an organization. Instruction is primarily through readings and cases. Prep. 41.812.

44.812 Financial Management II

Through readings and cases, this course concentrates on long-term sources and uses of funds, including capital budgeting techniques, dividend policies, and the concept of cost of capital. Risk and return trade-offs are also studied. Broad topics of overall financial strategy and timing are examined. Prep. 44.811.

44.814 International Financial Management

Deals with the specific concepts, policies, and techniques for the financial management of the multinational firm. Specific topics include operations of the foreign exchange markets, managing the foreign exchange risk, sources and instruments of international financing, foreign direct investment and the management of political risk, multinational capital budgeting, and financial control systems for the multinational. Prep. 44.812 or permission of instructor.

44.816 The Management of Financial Resources

This course examines both aspects of the decisions regarding the sources and uses of long-term funds. A thorough analysis of capital budgeting techniques and portfolio considerations is combined with an assessment of factors affecting a firm's capital structure. Company assets and how they

should be financed are the central questions. The most recent developments in financial management are explored. Prep. 44.812.

44.818 Working Capital Management

The current assets and liabilities sections of an organization's balance sheet determine the amount of long-term funds committed to working capital uses. This course examines strategies and analytical approaches for making wise decisions affecting these amounts. Material on money market conditions is included. Prep. 44.812.

44.820 Consumer Affairs

The objective of this course is to analyze a wide range of consumer problems and to examine the work of consumer activists as well as business efforts in the consumer field. Topics covered may range from the energy problem to the mechanical deboning of meat, depending on student interest. Class discussion will focus on specific consumer problems and general topics such as the social responsibilities of business, ethics and the businessman, and ecology. Prep. none.

44.825 Investment Banking

Issues presented are associated with policy, strategy, and administration of investment banking firms. Topics include issuance of securities, the service function of investment bankers, pricing a negotiated issue of common stock or competitive bid issue, and meeting capital requirements of a securities firm. Prep. 44.812.

44.826 Bank Management

Discusses, through case studies and analyses, the management policies of commercial banks, mutual savings banks, and savings and loan associations. Focuses on the lending, investment, and liquidity management policies of those financial institutions. Current issues and problems of these financial institutions also are emphasized. Prep. 44.812.

44.827 Portfolio Management

Approached from an institutional investor's point of view, this course will focus on constructing portfolios that meet specific objectives. Market efficiency, security valuation processes, risk analysis, market timing, transaction costs and diagnoses of results will be explored on a practical basis. The student will build a specific portfolio and then review it as both manager and client. In addition, organizing to systemati-

cally deal with problems of portfolio management and asset allocation modeling will be highlighted. Prep. 15 q.h. graduate credit.

44.901 Finance III — Advanced Financial Management

Offers an opportunity to study several important areas of financial management in greater depth than is possible in the basic finance courses. Topics include corporate capital structure, dividend policy, capital budgeting, and the management of current assets. Instruction is primarily through assigned readings and classroom case discussions. Prep. 44.812.

44.921 Investment Analysis.

Focuses on the development of a sound investment program, with attention to identification of investment principles, objectives, and risks. Emphasis is placed on the techniques of analysis, evaluation of various types of securities and the associated risks, and the operation of the securities markets, and the various methods of portfolio management. Prep. 44.812.

44.924 Mergers and Acquisitions

Seminar exploring the economic environment that has recently given rise to a large number of corporate mergers and the business factors underlying these corporate combinations. Studies the financial, managerial, accounting, and legal factors affecting mergers. Students learn how to appraise a potential merger and structure a merger on advantageous terms. Instruction is through directed readings, case discussions, and independent research. Prep. 44.812.

44.926 Public Utility Regulation and Finance

Public utilities are subject to a unique set of circumstances, constraints, and incentives that influence management decision making. This course is intended to be an introduction to public utility regulation and finance, to explore the basis for regulation, and to familiarize students with regulatory procedures, instruments, and practices. The implications for financial management are emphasized. Alternative regulatory systems are investigated and an evaluation of the performance of regulated utilities and regulatory agencies is conducted. Prep. 44.812.

44.935 Management of Financial Institutions

Acquaints students with the broad range of decision-making problems faced by major financial institutions, such as commercial banks and savings and investment institutions, when viewed as competitive, profit-seeking business entities. Major areas include sources and uses of funds, competition, regulation, and strategic policy planning by financial institutions. Instruction is primarily through readings and cases. Prep. 44.812.

45.805, 45.806 Operations Management I, II

The objectives of this two-course sequence are: (1) to develop an understanding of the management of operating systems: design, operation, control, evaluation, and modification; (2) to increase the student's decision-making capabilities in technical areas; and (3) to develop an appreciation for the operations manager's job. Topics include design of product and process, human engineering, capacity planning, line balancing, work measurement, job evaluation, wage payment systems, network scheduling, production planning, inventory management, production scheduling and control, and quality control. Operations Management I concentrates on the design of the operating system; Operations Management II focuses on its operation and control. Both courses rely on extensive use of case analysis.

45.809 Advanced Operations Management

Recommended for those whose career goals are positions of responsibility in the management of the manufacturing or operations function of an enterprise. Although the primary focus is upon manufacturing enterprises, complex operating problems in service-oriented institutions are included. Drawing primarily upon case studies, the course focuses on the development and implementation of detailed responses to the management requirements of operating systems. Emphasis is given to emerging technological developments, such as computer-based mechanization and automation, and to new developments in several areas of production and operations management. Prep. 45.806.

45.811 Purchasing and Materials Management

Course objectives are: (1) to better understand purchasing and materials management in the context of the total enterprise; (2) to analyze some of the concepts and techniques applied in purchasing and materials management; and (3) to develop managerial skills in evaluating representative administrative problems in planning courses of action. Topics include determination of quantity, quality, sources of supply, price, and schedule, make-or-buy considerations, legal considerations, and acquisition of capital equipment. Though based largely on teaching material drawn from industrial situations, the basic learning is applicable to nonprofit, institutional, governmental, and other enterprises. Actual cases are studied. Prep. 43.811, 45.806.

45.813 Operations Management in the Service Sector

Traditional courses in operations management usually deal with manufacturing, because the concepts and techniques of operations management were originally developed in manufacturing settings. However, as the service and nonprofit sectors of the economy gain in importance, they have greater need for the types of tools and techniques which manufacturing uses. This course explores the applicability of operations management techniques in nonmanufacturing environments. Industries covered include food service, health care, recreation, equipment rental, brokerage, insurance, and airline. Prep. 45.806 or permission of instructor.

45.815, 45.816 Behavioral Concepts and Organizational Behavior I

The first half of this two-course sequence examines major concepts and findings of the behavioral sciences which have particular pertinence to business and administration. Systematic ways of understanding behavior are developed. Specific topics include human development and motivation, interpersonal perception and communication, and small group processes. The second half of the course sequence relates these basic concepts to specific aspects of behavior in formally constituted organizations. Supervisory behavior is examined in the behavioral context, as well as in relations between groups, in order to develop ways of achieving collaboration. Prep. none.

45.817 Organizational Behavior II

The study of behavior in organizations is expanded in order to understand and deal systematically with the complex relationships found in larger organizations. An opportunity is provided to apply knowledge about people in organizations to the improvement of organizational systems and to the process of achieving changes in organizations. Prep. 45.816.

45.823 Career Planning and Development

Effective career planning and development is best viewed in the larger context of an individual's actualization process in life. Career evaluation considers personal values, interests, aspirations, sense of self-worth and managerial skills, in addition to the realities of specific occupational and professional choices. Participants may generate and analyze a wide variety of data to provide better insight into their goals, interests, and managerial skills. Prep. 45.816.

45.824 Organizational Behavior in Nonprofit Environment

Human service organizations involved in health care, welfare, and education are studied in reference to recent behavioral theories and concepts dealing with the internal and external complexities and interrelationships of large-scale organizations. Term projects are designed to conduct and analyze a problem situation and develop plans for implementing change. Readings, cases, and seminars. Prep. 45.816.

45.829 New Ventures: A Career Choice

Enables students to examine the nature of entrepreneurship and the appropriateness of self-employment for an individual. Focus is on the decision to own and operate one's own business. Students examine the values, motivations, goals, and life style required by the entrepreneurial role. Guest speakers, cases, selected readings, and self-assessment exercises help students identify the congruency between their own interests and goals and an entrepreneurial career. Also recommended for prospective loan officers, investment bankers and venture capitalists, CPAs, management consultants, and others whose career activities may involve them with entrepreneurs and managers of new ventures or smaller companies. Prep. 15 q.h. of grad. credit, or permission of instructor.

45.830 Formal Planning Systems

Addresses the theory and practice of present day state-of-the-art in the planning process for profit and nonprofit organizations of various sizes. Emphasis is on the problems top managers encounter in developing, maintaining, and improving planning systems. Topics include planning concepts, the critical role of the chief executive, the importance of creativity and flexibility, translation of strategic plans into current actions, and special planning problems. Prep. 15 q.h. of grad. credit.

45.833 Operations Management in the Health Care System

Recommended for students whose career goals are positions of responsibility in the management of the health care system. Objectives are: (1) to help provide a basic understanding of operations management problems existing in the health care system, and (2) to develop decision-making ability to deal effectively with these problems. Topics include the fundamentals of management in the health care system, organizational planning, operations planning and control, utilization of resources, and policy considerations in effective and efficient operation of the health care system. Cases, readings, and field project. Prep. 45.806, or permission of instructor.

45.834 Policy: Environmental Analysis

This first of three policy courses focuses on the environment in which strategy must be formulated in profit and nonprofit organizations. Techniques of environmental analysis are included with particular emphasis on the political-legal, economic, social, and technological environments as they relate to and influence the formulation of strategy. Prep. all other required courses with the exception of 41.813, 45.817, 45.836, and 45.837.

45.836 Policy: The Formulation of Strategy

Building on the materials presented in 45.834 this course examines strategy formulation. Particular emphasis is on the process by which strategy is formulated in actual business settings, including the influence of personal values on strategy formulation, who actually makes strategic decisions, what environmental and internal information is required to make strategic decisions, and what criteria are used to make the decisions. The role of different management levels in the process is considered. Prep. 45.834.

45.837 Policy: The Implementation of Strategy

The third required policy course compares and contrasts the approaches to strategy implementation in profit and nonprofit organizations. Topics include organizational structure and behavior, long-range planning, control and motivation systems, information systems, and leadership. All topics are considered within the systems framework of organizational strategy. Prep. 45.836

45.840 Managerial Styles and Sex Stereotypes

Examines the topic of sex roles from the point of view of organizational life and especially management and leadership styles. The dynamics by which sex role behavior evolves and the consequences of the socialization for management are explored with particular attention to organization and managerial processes with respect to sex roles. Prep. 15 q.h. of grad. credit.

45.843 Environmental Pressures and the Corporation

Rapid multidimensional change in the world environment creates substantial pressures on corporations, especially large multinationals. This course identifies and evaluates (1) environmental pressures of predicted significance in the coming decade(s); (2) useful approaches to interpreting the changing world environment; and (3) possible corporate responses to environmental pressures. The course considers ideological issues; pragmatic, strategic, and tactical adaptation; and structural and managerial changes appropriate to probable developments. Prep. 45.834 or permission of instructor.

45.844 The Status of the Free Enterprise System in the United States

Many people feel that the free enterprise system in the United States is in need of radical change. Others believe that radical change has already taken place. This seminar attempts to assess the status of the free enterprise system in the United States and to anticipate changes that will take place in the next quarter century. Enrollment is limited to advanced MBA students. Each student will be expected to prepare and present a paper on a relevant topic.

45.848 Organizational Development I

Organizational development is the process of planned, organization-wide change, managed from the top to increase organizational effectiveness through planned intervention by change agents. Organization development is examined as an emerging professional discipline, focusing on identifying variables affected by a change program and developing an understanding of methods and techniques. Prep. 45.816.

45.849 Organizational Development II

Organizational development is a systems-wide attempt to improve organizational climate and effectiveness. As such, there is an implied requirement to plan, implement, and monitor programs that will accomplish this task. The course focuses on the delivery of such programs to line management. Particular attention is given to the role of outside consultants and staff experts in carrying out the training function. Prep. 45.816 and 12 q.h. graduate credit.

45.867 Organizational Change

This course focuses on three fundamental areas: (1) organizations as stable systems that naturally resist both planned and unplanned change; (2) organizations as dynamic systems that continuously respond to both internal and external pressures for change; (3) strategies and techniques for designing, implementing, and managing change. The role of the change agent will be discussed in this context. Prep. 15 q.h. of graduate credit.

45.882 Management Consulting

This course focuses on the skills, knowledge, and attitudes necessary for competence in the "art of consulting." The analytical, human, organizational, and administrative elements of consulting are discussed, as are the differences between internal and external consultants. In addition, the course examines management consulting as an industry and as a potential profession. This course is intended both for future consultants and for managers who will be using the services of professional consultants. Prep. 15 q.h. of grad. credit.

45.902 Planning and Controlling Manufacturing Operations

The case method is used to focus on the information needed and the decisions that must be made to plan and control the flow of materials and services to meet the demands of the customer in a variety of institutional settings. Topics include the production planning and control system, its information flows and decisions; demand forecasting; basic inventory models and management concepts; warehousing and physical distribution; production planning with optimum utilization of the work force and inventories; manpower and operations scheduling. Prep. 45.806 or permission of instructor.

45.911 Manufacturing Policy

Focuses on major strategic and operating decisions typically addressed by the vice president of manufacturing/operations, such as investments in plant and equipment, barriers to entry in the industry, the impact of new products and/or processes, location decisions, and horizontal and vertical integration. An industry approach helps the student understand the totality of a top management situation including key variables such as the environment, economies of scale, and corporate strategies employed in the industry. Learning material includes cases, industry reference notes, industry process notes, films, field trips, and class visits by operating managers. Recommended for students who currently are in or expect to be in positions of major responsibility in manufacturing/operations and for students who must possess the capability of analyzing companies from an industry perspective such as those in investment banking, finance, and consulting. Prep. 45.806 or permission of instructor.

45.951 Executive Development

An examination of the executive position in an organization and the required personal characteristics and skills. The effects of cultural change and shifting mores on motivation and management control with their implications for developing appropriate organizational relationships are examined. Report writing, oral reports, and leading of group discussions are dominant techniques. Student evaluation is encouraged. Prep. 15 q.h. of grad. credit.

45.965 Management of Small Business Enterprises

Explores the operating problems of managing small enterprises. Case studies develop analytical approaches for appraising the risks and rewards of potential growth opportunities, as well as operating problems. Problems range from locating, evaluating, and financing a small company, to the survival and growth of an established business. Guest speakers relate pertinent business experiences to in-class activities. Prep. 15 q.h. of grad. credit.

45.968 Management of New Enterprises

Oriented toward the entrepreneur with emphasis on start-up situations, including buy-outs. Topics include 1) business opportunities introduced by new ideas, product development, licensing, inventions, patents, etc.; and 2) organization, start, and growth of a new business or the acquisition of a going concern, including fund raising and related state regulations. Prep. 15 q.h. of grad. credit.

45.969 Government and Business

Analysis of the role of government as a regulating force, as well as the nature and impact of government fiscal, economic, and socioeconomic policies on the conduct of business. The political and economic philosophies behind greater government participation in the economic structure of the nation as indicated by public-utility, anti-trust, labor, and socioeconomic legislation. Prep. 15 q.h. of grad. credit.

45.971 Personnel Management

Covers basic personnel functions: recruitment, selection, placement, rewards, compensation, training, and development of employees. Topics also include the implications of new government regulatory systems such as equal opportunity, safety, and pensions; the implementation of behavioral theories at the workplace; and the partnership of specialists and generalists in the overall management of an organizations' human resources. Cases and readings will be used in a lecture/class discussion format. Prep. 15 q.h. of grad. credit.

45.972 Labor Relations

Review of U.S. labor history and traditional labor policy as well as implications of new regulatory systems on labor management relations such as equal opportunity and safety. Overview of collective bargaining processes applied to emerging sectors of union organization including health care

and education. Lectures, cases, and readings. Prep. 15 q.h. of grad. credit.

45.975 Introduction to Health Care Systems

The present state of the system, dealing with its history and process and describing the parts of the delivery system, the payers, the consumers, the manpower, and the policy implications. Includes comparison of health care systems, lectures, discussions, and readings. Recommended for those entering the field. Prep. 15 q.h. of grad. credit.

45.977 Information Systems for Health Care Facilities

Introduction to the complexity, quality, and availability of information in the health care field and the state of the technological capabilities, as well as an understanding of the system's components through the use of this information. Covers systems information flow and new computer techniques. Cases, readings, and on-site visits. Prep. 15 q.h. of grad. credit.

45.981 Human Resource Management in Health Organizations

Focuses upon personnel selection, training, promotion, and overall personnel policies in health institutions. Topics include professionalism, use of paraprofessionals, education programs, committee structures, conflict resolution, and team approach to health care. Prep. 45.817 or permission of instructor.

45.982 Marketing and Public Affairs for Health Organizations

Examines role of marketing in promoting health and the services of health institutions. Traces traditional marketing strategies in the business environment and explores their applicability in not-for-profit organizations. Cases and field project. Prep. 43.812.

45.984 Health System Planning and Regulation

Traces the current and expected future impact of legislation and legal findings on the administration and delivery of health services. Prep. 45.975 or permission of instructor.

45.991 Business Law — Law of Contracts, Agency, and Sales

The legal aspects of contracts and the results of contractual obligations, the employment contract in general, with

emphasis on the principal and agent, and the master and servant relationships. Includes the law governing the sale of personal property under the Uniform Commercial Code. Prep. 15 q.h. of grad. credit.

45.992 The Law of Business Organizations and Negotiable Instruments

The Law of Negotiable Instruments as reflected in the Uniform Commercial Code, with special consideration given to commercial paper used in business transactions. The law governing formation and operation of partnerships, corporations, and other business organizations, with emphasis on the legal results and operations of those concerned with the liability of members thereof. A study of the legal framework within which the formal business organization must operate. Prep. 45.991 and 15 q.h. of grad. credit.

45.993 Labor Law

An overview of constitutional and legal problems involved in labor organizing, industrial relations, labor negotiations, labor contract enforcement, and dispute resolution in both private and public sectors of labor administration. Cases are studied for the legal principles underlying common law, state and federal laws, and constitutional questions of power and authority. The Sherman Act, Clayton Act, Norris-LaGuardia Act, and Labor Management Relations Act are considered.

45.996 Consumer Law

This course acquaints the student with developments in the law of contract, tort, and statutory enactments specifically applicable to consumer-related transactions, rights, and liabilities. Specific attention is given to products liability (negligence, express and implied warranties); fraud; financing sales (truth in lending; fair credit reporting; erroneous billing; equal credit opportunity; retail installment sales, reposessions, credit card liabilities); class action suits; unfair advertising; anti-trust and anti-competition; and consumer protection statutes regulating unfair and deceptive trade practices. Emphasis is placed upon the substantive law and upon what the business manager should know to prevent costly consumer complaints and litigation. A brief study of consumer protection agencies and administrative procedures is included. Prep. 15 q.h. grad. credit.

45.997 Special Studies in Business Administration (1 q.h. credit)

A special tutorial arrangement between a student and a faculty member for a guided reading, research, laboratory, fieldwork, report, or teaching experience. Recommended for graduate students who desire to do advanced work or carry out special investigation of a problem in business administration not specifically covered in the curriculum. Students must petition the Committee on Graduate Study in Business Administration for permission to register in this course. After receiving permission to take the course from a member of the College of Business Administration faculty, the petition must be submitted with an outline, a brief description of the work planned, and the name of the professor to whom the student will be responsible. The professor will submit to the Graduate Office a letter outlining in some detail the nature of the work that the student will be doing in the course. The course carries variable credit, ranging from one to three quarter hours. Prep. 15 q.h. of grad. credit.

45.998 Special Studies in Business Administration (2 q.h. credit)

See 45.997 for course description.

45.999 Special Studies in Business Administration (3 q.h. credit)

See 45.997 for course description.

46.810 Managing the Multinational Enterprise

An introductory exposure to the international business field and the theoretical basis for further exploration of the more practical aspects of international business operations. Deals with international economic, financial, and commercial relationships; the multinational enterprise; the interface between the firm and the international business environment; current issues in U.S. public policy affecting international business. Prep. 49.901.

48.801 Transportation Policy and Regulation

This course examines the process by which national transportation policies are formulated. Attention is given to the existing regulatory structure and its impact on shippers and carriers. Existing policies and regulations are critiqued with special emphasis given to such topics as the movement towards regulatory change in transportation. Prep. none.

48.860 International Transportation and Distribution Management

This course examines and analyzes the U.S. role in international transportation. Emphasis is placed on the industry structure of the two primary modes of transportation: aviation and maritime. It also examines the major indirect supporting businesses and/or agencies that are involved in the international movement of people and goods.

48.901 Corporate Transportation and Distribution Management

This course focuses on the design and management of corporate transportation and distribution systems. Emphasis is given to the analytical framework which is employed in making complex distribution tradeoffs. Attention is devoted to topics such as inventory control, location analysis, transportation planning and the integration of logistics planning with other functional aspects of the organization. Prep. none.

48.905 Urban Transportation

Analyzes urban transportation planning at the federal, state, and local levels. Explores the role of transportation in community developments, federal transit programs, and current urban transportation problems in the Boston metropolitan area. Topical coverage includes such matters as transit pricing, marketing of transit services, and examination of the interrelationship of federal transit policies with other governmental programs. Prep. none.

48.906 Management of Transportation Enterprises

This course is designed to focus on the major managerial decisions and problems that confront management in the different modes of transportation. The transportation modes covered are airlines, railroads, motor carrier, and bus operations. Among topics covered are pricing, equipment selection, labor relations, and organizational structures. Prep. 48.801.

48.907 Seminar in Transportation and Distribution Management

The basic objective of this course is to acquaint the student, through intensive research, with the major contemporary issues in transportation and physical distribution management. Students are required to conduct independent research which leads to both oral and written presentations of research findings.

49.901 Managerial Economics I

Macroeconomics for business managers. Acquaints students with the general economic environment. Topics include income and employment theory; classical, Keynesian, and monetarist aggregate demand and supply systems; money and capital markets; fiscal and monetary policy. Prep. none.

49.902 Quantitative Analysis I

Examines the process of statistical inference whereby the analyst is enabled to infer or draw conclusions about the parameters of a large data set on the basis of sample statistics. Other topics include the generation of subjective probabilities, the revision of probabilities to incorporate new information, and the incorporation of probabilities into the decision-making framework. Prep. none.

49.903 Quantitative Analysis II

Introduction to the theory and practice of management science. Regression analysis, linear programming, and simulation are discussed in text and case material. Emphasis is on practical application of the techniques. Issues of problem definition, model building, relevant cost determination, solution generation, and implementation of results are considered. Prep. 49.902.

49.908 Mathematics for Managerial Decisions

Objectives are: (1) to introduce important mathematical concepts and tools used today by modern management; and (2) to illustrate the applicability of mathematics to problems in economics, finance, production, marketing, statistics, computers, and other related fields. Recommended for students who do not consider themselves mathematically sophisticated or for those needing a review before taking other quantitative courses. Topics include set theory, functions and systems of equations, matrices, differential calculus, and introduction to mathematical optimization models. Prep. none.

49.909 Managerial Economics II

Presents microeconomic theory emphasizing the economics of the firm in a competitive enterprise economy. The tools and techniques of economic analysis are used to analyze and solve business problems. Theoretical analysis is employed to explain real-world phenomena. Prep. 49.901 (or equivalent) and 49.903.

49.910 Decision Analysis

Decision analysis is a discipline for systematic evaluation of alternative actions. In selecting among alternative strategies, the decision maker must consider: (1) future events and subsequent actions that could exert a significant influence on the consequences of selecting a given strategy; (2) the likelihood of each such event occurring; (3) the consequence associated with the occurrence of each such event in conjunction with the action alternative being evaluated; and (4) the relative desirability of each consequence. The process for quantifying each of these and dealing with their interrelationships is examined within the unifying framework of the decision tree. Prep. 49.902.

49.911 Public Policies Toward Business

The main types of American policies toward business are presented, with primary attention on the economic content of policies as they evolve parallel to market conditions. Topics include public utility regulation, antitrust, financial markets regulation, and public enterprise. Prep. 49.901.

49.912 Economics of International Business

The environment in which multinational firms conduct their operations. Development of the external sector of the national economy, beginning with the theory of international trade. Trade policy, including tariff and nontariff barriers, and progress toward trade expansion and liberalization are discussed. Following theory and policy, emphasis is placed on the interdependence of national economies and on the means of international payment. The International Monetary Fund, gold, foreign exchange rates, and proposed reforms to the system are discussed. Links between the condition of the external sector and the domestic economy are examined. Special issues include aid to less developed countries, East-West trade, and oil imports. Prep. 49.901.

49.918 Information Theory and Systems

Develops a framework for the analysis of communication and information systems in organizations. Aspects of communications theory are studied as background for building this framework and its underlying theory is tested. The course develops a process for the design of management information systems not only for the purpose of design but also to provide the basis

for appropriate analysis. Prep. 15 q.h. of grad. credit.

49.932 Introduction to Computer Applications

A business-oriented introduction to data processing functions and systems. Introduction to the history, terminology, technology, and economics of data processing hardware and software. Management issues in the design, selection, evaluation and use of computers and computer services. Individual familiarization with elementary computer programming by using either batch or time-shared computer facilities to solve simple business-oriented exercises. When feasible, a visit to a data processing center is conducted. Prep. none.

49.933 Management Information Systems

The Management Information Systems (MIS) concept stressing the benefits of computer-based information systems to all levels of management is emphasized. Case studies are utilized to illustrate systems design, cost/benefit analysis, appropriate management involvement, and implementation procedures. The course concentrates on management issues rather than computer technology. Prep. 49.932.

49.935 Computer Applications in Management Science

Discussion of the technical, economic, and procedural aspects of applying quantitative techniques of management science to planning and operations problems. Heavy emphasis is on the computer's role in this process. Concentration is on selected techniques such as linear programming, simulation, and multiple regression analysis. Practical problems of designing computer programs, selecting canned packages, gathering data, and implementing results are considered. The required term project allows an in-depth study of an area and/or technique of the student's choosing. Ability to program is not required, nor is computer programming emphasized; however, extensive time-sharing and batch-processing computer service is available for those who wish to use it. Prep. 49.903 and 49.932.

49.981 Health Services Research

This is an interdisciplinary course focusing on the design and execution of research projects on the organization and delivery of health services. Research methodology and quantitative skills are developed through field projects. Prep. 49.903 and 49.932.



Academic Information

The general regulations and minimum requirements for all graduate programs are established by the Northeastern University Graduate Council. In some matters the committee of each graduate school is allowed to establish regulations within limits defined by the Council. The regulations and academic requirements which follow have been formulated in accordance with this general policy.

Academic Standards and Degree Requirements

In order to qualify for the MBA degree, an average grade of B must be obtained in the total credit hours required for graduation. No more than three extra courses or repeated courses may be taken in order to satisfy this grade requirement.

A student may not graduate with more than four course grades of C. Students accumulating more than four C's will have one quarter to clear the added deficiencies; no further course work will be permitted while these deficiencies are outstanding.

Within the above limitations, a required course for which a grade of F is received must be repeated during the next academic quarter with a grade of C or better, and may be repeated only once. If a grade of F is received in an elective course, that course may be repeated once with a grade of C or better, or another elective course may be substituted for it. If a grade of C is received in a required course, that course may be repeated once to obtain a grade of B or better.

Students with more than three academic deficiencies (grades of C or F) may be automatically withdrawn from the program.

The decision to withdraw a student from the program is made by the Committee on Graduate Programs and may be made without prior notification of the student.

Grading System

Performance of students in graduate courses will be recorded by the instructor through use of the following grades:

A Excellent

This grade is given to students whose performance in the course has been of very high graduate caliber.

B Satisfactory

This grade is given to students whose performance in the course has been at a satisfactory level.

C Fair

This grade is given to students whose performance in the course is not at the level expected in graduate work.

F Failure

This grade is given to students whose performance in the course is unsatisfactory.

In addition, the following letter designations are used:

I Incomplete

This grade is given to students who fail to complete the work of the course.

Incomplete grades will only be issued when a final exam or final project has not been completed. A student who has not completed assignments during the quarter will be given a final grade based on work submitted. The deficient work must be made up within the quarter following that for which the grade I is received, unless the instructor grants an extension. However, such an extension may not exceed two additional consecutive calendar quarters.

Credits and Class Hours

All credits at Northeastern University are entered as quarter-hour credits. Fifteen quarter hours of credit are equivalent to twelve semester hours.

All classes in the Graduate School of Business Administration meet on a quarter basis, with an academic quarter defined as a term of approximately 12 weeks' duration. In the summer quarter, classes meet in two six-week sessions.

A minimum of 11 classes must be scheduled for each course during the fall, winter, and spring quarters. In the divided summer session a minimum of 10 classes must be scheduled.

All classes meet once weekly for two hours. Evening classes usually meet from 5:10 p.m. to 7:10 p.m. or from 7:15 p.m. to 9:15 p.m. on Monday through Thursday in Boston. At the Burlington campus, classes meet from 5:00 p.m. to 7:00 p.m. or from 7:15 p.m. to 9:15 p.m.

Warning Letters

A student who drops below the academic standards of the Graduate School of Business Administration will be notified of this deficiency. This official letter ensures that the student is cognizant of the situation.

A student in serious academic difficulty will be required to consult with officials of the Graduate School and may be placed on academic probation. In extreme situations, the student may be required to withdraw from the program.

Grade Reports and Academic Standing

Students are expected to attend all meetings of their classes. Absence from regularly scheduled classes may seriously affect their final grade.

At the graduate level, there is no designated formal examination period. Finals are to be given during the last class of the quarter unless no final exam is scheduled, in which case a class meeting takes the place of the examination.

Grade reports are mailed to the student's home address several weeks after the end of the quarter. Any questions about particular grades should be addressed initially to the professor and, subsequently, to the Director of the Graduate School.

A review of academic standing, in terms of courses required for the MBA degree, can be requested by contacting the office of the Graduate School of Business Administration in 205 Hayden Hall.

Transfer Credit

A maximum of 15 quarter hours of graduate credit obtained at another institution may be accepted toward the master's degree, provided that the credits transferred carry grades of A or B, have been earned at an accredited institution, have not been used toward any other degree, and are relevant to the MBA Program. Students should petition the Graduate School of Business Administration in writing for all transfer credit. Petition forms may be obtained in Room 205, Hayden Hall. Grades of transfer courses are excluded in the computation of the academic average necessary for completion of the degree requirements.

Waiver Procedures

Students with strong academic achievement in a specific course area may petition to waive required courses in that area. Although all petitions for course waivers must be initiated through the Graduate School office, each petition is subject to approval by the faculty within the particular academic area involved.

The faculty of each department has the authority to determine the adequacy of a student's background relative to the course material to be waived. Some departments may require examinations prior to waiver; others may dictate advanced electives to be taken in lieu of required courses successfully waived.

Several undergraduate courses in a specific area are generally required for a successful course waiver. The following guidelines also apply:

1. No undergraduate course can be considered toward waiver request unless it was taken at an accredited school.
2. No undergraduate course can be counted toward a waiver request unless a grade of "B" or better was received.
3. No student shall receive the MBA degree unless at least 18 graduate courses are taken within the Northeastern University graduate program.

Petition forms and waiver guidelines may be obtained from the office of the Graduate School of Business Administration, 205 Hayden Hall.

Course Registration and Withdrawal

Part-time students must register during the periods listed on the school calendar. Dates of registration are specified by letter for students accepted for full-time study.

Mail preregistration is available for all regularly scheduled courses in all academic quarters. The necessary materials will be mailed to all students several weeks prior to the beginning of each quarter. Students should fill out the application as directed and return it as soon as possible to the Registrar's Office, 120 Hayden Hall, Northeastern University, 360 Huntington Avenue, Boston, Massachusetts, 02115.

In order to withdraw from a course, a student must submit an official withdrawal form obtained at the Registrar's Office or at the Burlington campus main office. Withdrawals may be made through the ninth class meeting of the quarter. Ceasing to attend a class or notifying the instructor does not constitute an official withdrawal. Tuition refunds are granted only on the basis of the date on which the form is filed in the Registrar's Office.

Petitions for withdrawal from a course after the ninth class meeting of the quarter must be submitted to the Director of the Graduate School, and may be approved to avert unusual hardship for a student. Petition forms may be obtained in the office of the Graduate School of Business Administration.

Completion of Program

Students are expected to maintain continuous progress toward a degree. Any student who does not attend Northeastern for a period of two quarters without notifying the program director will be classified as inactive.

All inactive students must submit a written petition to the director of the program in order to be readmitted to graduate study.

All work for advanced degrees must be completed at the University, unless approval for work taken elsewhere is obtained from the Director of the Graduate School of Business Administration.

Application for Degree

A commencement card must be filed with the Registrar's Office at the beginning of the quarter prior to graduation to assure that all degree requirements are completed. Prompt filing of the commencement card also ensures the correct spelling on the diploma.

Time Limitation

Course credits earned in the program of graduate study, or accepted by transfer, are valid for a maximum of seven years.

Transcripts

Applications for transcripts of record are made at the Registrar's Office (120 Hayden Hall). A fee of \$1.00 is charged for each transcript request.

Tuition and Fees

Tuition

Tuition for master's degree candidates and special students is presently \$88.50 per quarter hour of credit. Since each graduate course is three credit hours, the cost for each course is \$265.50.

Tuition statements are mailed to students by the Bursar's Office and are payable by check to Northeastern University on or before the date specified. Tuition rates and fees are subject to revision by the Board of Trustees at any time.

Fees

All applications must be accompanied by a nonrefundable application fee of \$25. No applications will be processed until the fee has been received by the Graduate School of Business Administration. Checks should be made payable to Northeastern University and sent directly to the office of the Graduate School of Business Administration, 205 Hayden Hall.

Upon notification of admission, all full-time applicants are required to pay a tuition deposit of \$100. Applicants accepted for part-time MBA study are required to pay a tuition deposit of \$50. These deposits are credited to the student's tuition and are not refundable for those who do not register. Students accepted into the Management Intern Program must also pay a fee of \$100 per quarter to cover the cost of the residency orientation program and workshops.

Other fees include a charge of \$25 for late payment of tuition, and a fee of \$25 for all degree candidates, payable at the beginning of the spring quarter for students graduating in June and at the beginning of the summer quarter for students graduating in September.

Full-time students are charged \$12.50 per quarter for the services available in the Student Center. The fee for graduate assistants is \$6.25 each quarter. All part-time students registered for courses on the Boston campus are charged \$.75 a quarter.

All full-time students must pay a nonrefundable University Health Services fee of \$160 each year. This fee provides Blue Cross/Blue Shield coverage and entitles the student to the University Health Services medical care.

All financial obligations to the University must be discharged before graduation.

Refunds

Tuition refunds are granted only on the basis of the date appearing on the official withdrawal form filed by the student. Non-attendance does not constitute official withdrawal. Questions regarding refunds should be discussed with the Bursar's Office. Refunds will be granted in accordance with the following schedule:

Official Withdrawal Filed Within	Percent Tuition Refunded
First week of quarter	100
Second week of quarter	75
Third week of quarter	50
Fourth week of quarter	25



Facilities



Boston Campus

The main campus of Northeastern University is located at 360 Huntington Avenue in the Back Bay section of Boston. Long renowned as one of the great academic centers of the world, Boston combines a wealth of diverse cultural and historical resources.

Within walking distance of the Huntington Avenue campus are such varied institutions as the Museum of Fine Arts, Symphony Hall, Horticultural Hall, the Isabella Stewart Gardner Museum, the Harvard teaching hospitals, the Boston Public Library, Fenway Park, and many other schools and colleges.

Major transportation facilities serving the Boston area are Logan International Airport, two rail terminals, two bus terminals serving inter- and intrastate lines, and the MBTA subway-bus service within the metropolitan suburban area (including direct service to and from the University). For motorists, the best routes to the campus are the Massachusetts Turnpike (Exit 22) and Route 9, of which Huntington Avenue is the intown section. Parking is available in several specially designated areas on the University campus. (Refer to the Boston campus map.)

Hayden Hall

The majority of courses offered by the Graduate School of Business Administration are held in Hayden Hall. The four-story, glazed brick building, which adjoins Richards Hall off the central quadrangle of the University's Boston campus, is currently undergoing renovation. The modern classroom facility (tiered seating in the round) is intended to complement the extensively used case method of study as well as the variety of other teaching methods employed within the graduate curriculum.

Ell Student Center

The Carl S. Ell Student Center provides facilities for student recreation and extra-curricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is located in this building. Also included are special drama facilities, a ballroom, main lounge, fine arts exhibition area, student offices, conference rooms, and a dining area seating more than 1,000.

Libraries

The University library system consists of the Dodge Library, which is the main library; the Burlington campus library; the School of Law library; and divisional libraries for Physics and Electrical Engineering, Chemistry and Biology, Mathematics and Psychology, and Health, Physical and Recreation Education, and Physical Therapy. There are additional subject collections for the Center for Management Development at Andover, Massachusetts, and the Marine Science Institute in Nahant.

The library collections include 415,000 volumes supplemented by approximately 385,000 titles in microprint, microfilm, and microfiche forms. The collection also includes approximately 3,700 periodical titles; 100,000 documents; and 4,600 sound recordings.

Computation Center

The Northeastern University Computation Center currently utilizes a Control Data Corporation CYBER 72 computer to provide batch-processing and time-sharing services to the University community. The College of Business Administration has its own time-sharing center equipped with Digital Equipment Corporation DEC WRITER II terminals. All students in the MBA program will be given the opportunity to become familiar with and to use this equipment.

Career Development and Placement Services

The Department of Career Development and Placement Services provides career guidance, counseling, and placement assistance for all members of the Northeastern University community from the undergraduate years to retirement, and provides guidance counseling and admissions assistance to undergraduate and graduate students seeking admission to graduate and professional schools.

The Department is located in Rooms 132 and 133 on the first floor of the United Realty Building, 107 Forsyth Street. A highly qualified professional and support staff is available to assist students and alumni with any problems related to career directions, job finding, and graduate study.

Individual placement counseling is available for all MBA candidates. Students are urged to participate in on-campus recruiting programs, especially those interested in entry-level MBA positions.

Office of Services for the Handicapped

The Northeastern University Office of Services for the Handicapped was established to meet the needs of any disabled member of the University community. The office is located in Room 5, Ell Center and is staffed from 8:30 to 4:30, and evenings when necessary. Special services available for

disabled students through OSH include orientation, counseling, housing, auxiliary aids and equipment, and general assistance. The person responsible for coordinating services for the handicapped is Ruth Bork, 5 Ell Center; the office can be contacted by telephoning 437-2675.

Cabot Physical Education Center

The Godfrey Lowell Cabot Physical Education Center is one of the best equipped in New England. The large gymnasium contains four basketball courts. In addition, the Center consists of an athletic cage, a small gymnasium, and a rifle range.

The Barletta Natatorium contains a 105-foot swimming pool, a practice tank for the rowing team, a weight room, handball courts, and shower and dressing facilities.

The University Bookstore

The bookstore is located on the ground floor of the Ell Student Center. Business hours are from 8:00 a.m. to 7:00 p.m. Monday through Thursday, and until 4:00 p.m. on Friday, with longer hours during the first week of each quarter. All books and supplies that are required by students for their work in the University may be purchased at the bookstore.

Lane Health Center

A comprehensive program of medical care is provided to all full-time registered students. The University maintains a Health Services Clinic in the Forsyth Building, Room 135, which is open for emergencies at all times and is equipped to deal promptly with medical conditions that may arise. All entering students must file a record of physical examination with Health Services. Regular clinic hours for the student body are held by staff physicians from 9:00 a.m. to 4:30 p.m., Monday through Friday. Health Services can be reached at all times by telephoning 437-2772.

Suburban Facilities

Burlington Campus

The Burlington campus, consisting of two buildings located near the junction of Routes 128 and 3 in Burlington, Massachusetts, was established to meet the needs of individuals and of industry in the area. Elliot Hall contains classrooms, an auditorium, a bookstore, and a cafeteria. The library provides areas for quiet study and contains more than 50,000 volumes, as well as microfiche periodicals. In addition to graduate courses in business administration, a wide variety of academic programs is offered by Northeastern University at this facility.



Warren Center

The Warren Center is a practical laboratory in outdoor education and conservation for Boston-Bouv  College. At this center in Ashland there are tennis courts, field hockey and lacrosse fields; a waterfront for swimming and boating; fields and forests; and the Hayden Lodge with a recreation hall, dining facilities, and conference accommodations.

Henderson House

Henderson House, located in Weston, Massachusetts, is the home of Kenneth G. Ryder, President of Northeastern University, and also serves as a conference center. The Management Workshop conducts its sessions there on a regular basis. The MBA Association, as well as other Northeastern University groups, holds luncheons, seminars, and special conferences in this elegant facility.





General Information

I.D. Cards

An I.D. card is necessary to obtain a parking sticker, borrow a book from the library, write a check in the bookstore, and to use various other University services. Cards are mailed to students by the Registrar's Office during the first week of classes at the beginning of each quarter. I.D. cards must be carried by students at all times when on Northeastern University property.

Health Insurance

All full-time graduate students are covered by a special Blue Cross/Blue Shield policy (included in Health Services fee) which remains in effect continuously from the day of initial registration until the first of the month following withdrawal, dismissal, or graduation. Married students may see the Bursar regarding supplementary coverage for dependents.

Parking Stickers

Due to the large number of students who attend classes at Northeastern University's Boston campus, the number of parking spaces is limited and restricted to those with parking stickers.

For full-time parking privileges a student may pay \$10 at the Bursar's Office (248 Richards Hall) and present a current University ID, a driver's license, and automobile registration at the Traffic Office (101 Forsyth Building). For evening parking only (after 2:30 p.m.) the fee is \$2.

All parking is available on a first-come, first-served basis.

Emergency Closing of the University

Students, faculty, and staff are notified by radio when it becomes necessary to cancel classes because of extremely inclement weather. Radio stations WBZ, WEEI, WHDH, WJDA, WCOP, WRKO, WLYN, WKOX, WHAV, and WLLH-AM; and WVBF and WBCN-FM, will announce the University's decision to close.

In addition, the University maintains a snow emergency telephone number.

Family Educational Rights and Privacy Act

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records wherever appropriate and to challenge specific parts of them when they feel it necessary to do so. Specific details of the law as it applies to Northeastern are printed in the *Student Handbook* and are distributed annually at registrations of University College and the graduate schools.

MBA Association

The Northeastern University MBA Association was formed to enhance the career and professional objectives of the University's MBA alumni, faculty, and current students. The association has successfully organized such events as professional days, business luncheons featuring well-known speakers from the Boston business and professional community, and receptions for current-year graduates.

The MBA Association's objectives are to:

- encourage the continuing professional development of its members
- promote interest in Northeastern's Graduate School of Business Administration
- attract promising students to the school
- encourage and support Northeastern's unique student intern program
- provide scholarship assistance
- enhance the relationship of the MBA Program within the University community.

The MBA Association promotes its objectives through seminars, workshops, lectures, and other events designed to interest MBAs.

Honors and Awards

Beta Gamma Sigma Society Award

Beta Gamma Sigma is the national honorary society of colleges of business administration. The purpose of this society is "to encourage and reward scholarship and accomplishment among students of business administration, to promote the advancement of education in the art and science of business, and to foster integrity in the conduct of business operations."

Each year the top twenty percent of students graduating with a Master of Business Administration degree are honored and invited to join Beta Gamma Sigma.

MBA Association Awards

At a ceremonial dinner at the end of the spring quarter the MBA Association honors four students for outstanding academic performance, one student each from the management intern program, the full-time program, the part-time program, and the Executive MBA Program.

Phi Kappa Phi

All MBA candidates with a 4.0 grade point average are nominated to Phi Kappa Phi, a national interdisciplinary honor society.



Application Information

Admission Requirements

To be admitted for graduate work in the College of Business Administration, applicants must have completed undergraduate work of high quality and must have obtained a bachelor's degree from an accredited institution of higher learning. The overall quality of undergraduate achievement is considered to be of more importance than the particular field of specialization. Official transcripts of all previous undergraduate and graduate work must be submitted to the Graduate School of Business Administration before admission can be considered or an evaluation made.

The basic criteria considered in the admissions procedure are undergraduate grades, GMAT scores, previous graduate work, job experience, and present job level. An overall impression of strength, past success, and motivation to succeed in the Graduate School is desired in applicants for the program.

Although the MBA presumes no specific level of competence in business education, MBA students have reported that previous exposure to accounting, economics, and statistics is particularly helpful.

International Students

In addition to the admissions requirements listed above, the Graduate School of Business Administration requires all international students for whom English is not

their first language or who have not graduated from an American university to take the Test of English as a Foreign Language (TOEFL). Applications for the TOEFL can be obtained from TOEFL, Box 895, Princeton, New Jersey 08340 USA.

International students must file, as a part of the admission process, a statement indicating how they plan to finance their education. Currently, the estimated graduate school expenses, not including living costs, amount to \$8,000 for the entire graduate program. International students are eligible for fellowships, assistantships, and tuition scholarships. Information can be obtained from the financial aid office in 254 Richards Hall.

Application Procedure

Applications are considered complete when the following items are received in the Graduate School Office:

- Completed official application form, typed
- Nonrefundable \$25 application fee
- Official Graduate Management Admission Test (GMAT) Report
- Official transcripts from all undergraduate and graduate institutions previously attended. Applicants are required to submit these transcripts when submitting the application. The application contains a transcript request form and transcript envelope which must be used. The request procedure is outlined in the application instructions.

- Test of English as a Foreign Language (TOEFL) scores, only required for applicants whose native language is not English

Application material should be mailed to:

Graduate School of Business
Administration
205 Hayden Hall
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115

Applications for the GMAT Examination can be obtained by writing to:

Educational Testing Service
Box 966
Princeton, New Jersey 08540

Application Deadlines

Official transcripts and official GMAT scores must be received before the deadlines listed below in order for an application to be considered for admission.

The Graduate School of Business Administration has a rolling admissions policy. When application materials are complete (see "Application Procedure"), the applicant will receive notification within several weeks. Applicants are encouraged to submit their applications as early as possible. An interview may be required as part of the admission process.

Management Intern Program

- April 1 for the summer quarter which begins the fourth week in June
- October 15 for the winter quarter which begins the first week in January

Full-Time Program (Two-Year)

- April 1 for the fall quarter which begins the fourth week in September

Assistantships (Two-Year Full-Time)

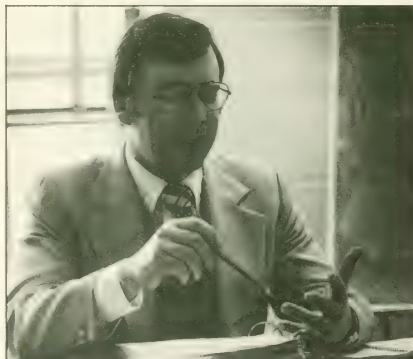
- March 15 for the fall quarter which begins the fourth week in September

Part-Time Program

- November 1 for the winter quarter which begins the first week in January
- February 15 for the spring quarter which begins the first week in April
- May 15 for the summer quarter which begins the fourth week in June
- August 1 for the fall quarter which begins the fourth week in September

Application Procedure for Other Programs

Application forms and the deadlines for the Executive MBA Program, the M.S. in Accounting Program, the Certificate for Advanced Study Program, and the programs offered by the Center for Management Development can be obtained through the appropriate offices.



Financial Assistance

Graduate students are offered various alternatives for obtaining financial assistance. As previously mentioned, the Graduate School of Business Administration offers tuition remission and a stipend for their graduate assistants. Opportunities for employment during program internships may be available for students in the Management Intern and Master of Science in Accounting programs. The Northeastern University Office of Financial Aid offers several types of financial assistance and a limited number of fellowships are available through the African-American Institute and the University Housing Office.

Northeastern University Office of Financial Aid

The Northeastern University Office of Financial Aid offers two types of assistance to graduate students: 1) the National Direct Student Loan, and 2) the College Work-Study Program. These awards are based on financial need. Aid granted from these programs, sponsored by the federal government, is dependent upon the amount of funds allocated to Northeastern University each year.

Only students who are officially accepted as degree candidates to a graduate school of Northeastern University are eligible for financial aid. The University does not award financial aid to students who are not citizens or permanent residents of the United States.

Northeastern University is a participant in the Graduate and Professional School Financial Aid Service (GAPSFAS). All applicants must file a GAPSFAS form in order to be considered for financial aid. All sections of the GAPSFAS form must be completed and sent to GAPSFAS, Box 2614, Princeton, New Jersey, 08540. No decision on an application for financial aid will be made until the GAPSFAS is received. Financial aid applications are available in the Office of Financial Aid, 254 Richards Hall. Application deadlines are:

April 15 fall quarter
August 15 winter quarter
November 15 spring quarter
January 15 summer quarter

College Work Study Program

This program is available to full-time graduate students who have financial need. Students can earn as much as \$5.00 per hour working on or off campus in public or private nonprofit organizations. This program is administered solely by the Office of Financial Aid and should not be confused with the University's Cooperative Education Program.

National Direct Student Loan

This assistance is available to full-time graduate students who need a loan to meet their educational costs. Graduate students may borrow up to \$10,000 under this program. Repayment and interest do not begin until nine months after the student ceases to carry at least a half-time academic load at any institution of higher education. Repayment may be extended over a ten-year period with an interest rate of 3% per annum. No payments are required for up to three years while a borrower is serving in the Armed Forces, Peace Corps or VISTA. Cancellation provisions are available for borrowers who work in certain fields of teaching or specified military duty.

Guaranteed Student Loan Program

Under this program, students who are matriculated degree candidates enrolled for at least one-half the normal academic load may borrow up to \$5,000 per year from a participating bank or other financial institution. Terms and conditions of these loans vary from bank to bank. New federal regulations affecting this program were signed into law on November 1, 1978; under the Middle Income Assistance Act, the federal government will pay the interest on the loan while the student is in school. The student must begin repayment of the loan nine months after ceasing to carry at least a half-time academic load. Repayment may be extended for as long as ten years with an interest rate of 7% per annum. No payments are required for up to three years while a borrower is serving in the Armed Forces, Peace Corps, or VISTA. Information and applications are available from banks, state guarantee agencies, and regional offices of the U.S. Office of Education.

Residence Hall Staff Positions

A limited number of full- or part-time staff positions may be available each year in the undergraduate residence halls. Minimum compensation for appointments includes room, board, and a quarterly stipend. Further information may be obtained from the Office of the Dean of Students for Housing, 106 Ell Building.

Martin Luther King, Jr., Fellowships

A limited number of full-time Martin Luther King, Jr., Fellowships are available. Holders of these appointments devote full time to graduate work. Further information is available at the African-American Institute, Northeastern University, 40 Leon Street, Boston, Massachusetts 02115.

Acceptance Conditions

Northeastern University, which is a member of the Council of Graduate Schools of the United States, subscribes to the following resolution of the Council: "Acceptance of an offer of financial aid (such as a graduate scholarship, fellowship, traineeship, or assistantship) for the next academic year by an actual or prospective graduate student completes an agreement which both student and graduate school expect to honor. In those instances in which the student accepts the offer before April 15 and subsequently desires to withdraw, the student may submit in writing a resignation of the appointment at any time through April 15. However, an acceptance given or left in force after April 15 commits the student not to accept another offer without first obtaining a written release from the institution to which a commitment has been made. Similarly, an offer by an institution after April 15 is conditional on presentation by the student of the written release from any previously accepted offer."

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Janice Walker



Academic Calendar

Fall quarter 1979

Registration period
 Burlington
 Boston
 Classes begin
 Last day to drop a course
 Classes end

Tuesday-Wednesday
 Monday-Thursday
 Monday (after 4 p.m.)
 Wednesday
 Friday

September 11-12
 September 17-20
 September 24
 November 21
 December 14

Winter quarter 1979-80

Registration
 Burlington
 Boston
 Classes begin
 Last day to drop a course
 Classes end

Tuesday
 Monday-Thursday
 Wednesday (after 4 p.m.)
 Friday
 Friday

November 27
 December 3-6
 January 2
 February 29
 March 21

Spring quarter 1980

Registration
 Burlington
 Boston
 Classes begin
 Last day to drop a course
 Classes end

Tuesday
 Monday-Thursday
 Monday (after 4 p.m.)
 Friday
 Friday

March 4
 March 10-13
 March 31
 May 30
 June 13

Spring Commencement

Sunday

June 15

Summer quarter 1980

Registration
 Burlington
 Boston
 First half classes begin
 First half classes end
 Second half classes begin
 Second half classes end

Monday-Tuesday
 Wednesday-Thursday
 Monday (after 4 p.m.)
 Tuesday
 Wednesday
 Thursday

June 9-10
 June 11-12
 June 23
 July 29
 July 30
 September 4

Fall Commencement

Thursday

September 11

Holidays 1979-80

Columbus Day	Monday, October 8
Veterans' Day	Monday, November 12
Thanksgiving Day Recess	Thursday-Saturday, November 22-24
Christmas Vacation	Monday-Tuesday, December 17-January 1
Martin Luther King, Jr., Day	Tuesday, January 15
Washington's Birthday	Monday, February 18
Spring Vacation	Monday-Saturday, March 24-29
Patriot's Day	Monday, April 21
Memorial Day	Monday, May 26
Independence Day	Friday, July 4
Labor Day	Monday, September 1

Faculty and Administration Directory

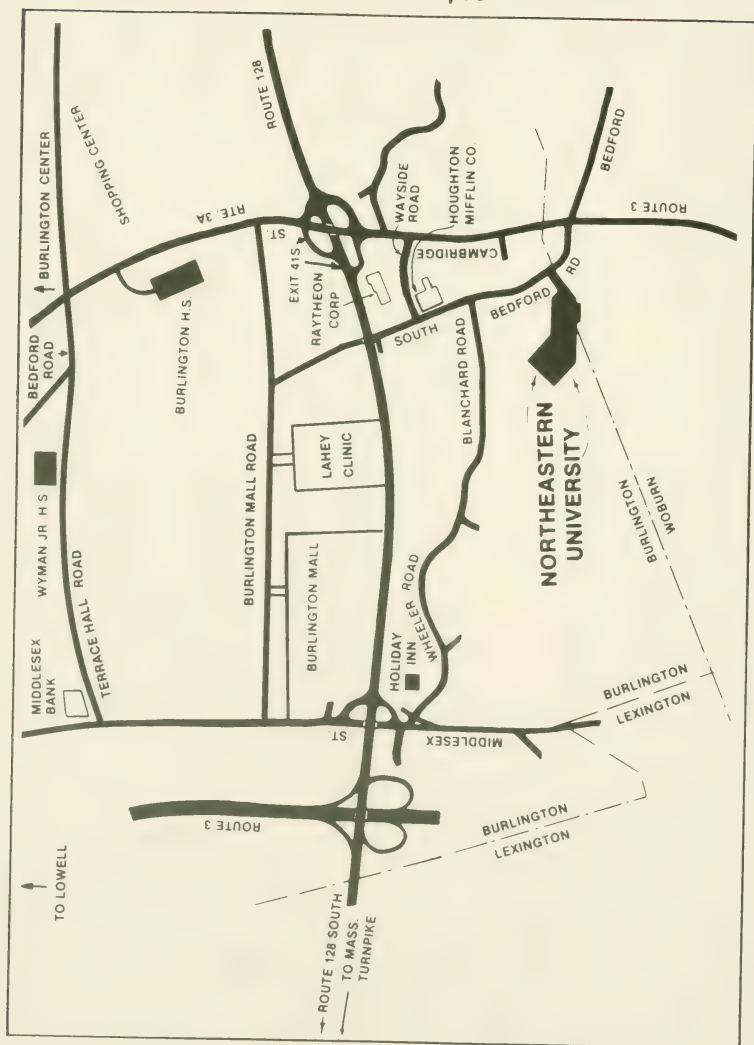
Name	Group	Office in Hayden Hall	Telephone No.
Arnett, Matthew D.	Human Resources	302	617-437-3255
Atamian, Elliott L.	Finance	413	3267
Atkinson, Emily L.	Administration	204	2717
Boyd, David P.	Human Resources	305	3257
Briggs, Warren G.	Management Science	413	3267
Chugh, Lal C.	Finance	413	3266
Clarkson, Geoffrey P.E.	Administration	202	3230
Collazo, Charles J.	Marketing	414	3260
Curran, Joseph R.	Accounting	404	3242
Curtis, Ellen F.	General Management	302	3255
Diffenbach, John	General Management	302	3255
Dunn, Dan T., Jr.	Marketing	414	3260
Elkins, T.A.	Management Science	213	3252
Eriksen, Steven E.	Management Science	213	3252
Fenwick, Ian D.	Marketing	414	3260
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Ford, John K.	Finance	413	3248
Frantzis, Stavros S.	Management Science	213	3252
Frechette, Henry M., Jr.	Human Resources	304	3257
Gilman, Tamara A.	General Management	302	3255
Godin, Victor B.	Management Science	213	3252
Golemme, Joseph M.	Administration	206	3244
Goodstein, Jerry D.	Administration	205	2714
Graetz, Herbert	Human Resources	305	3257
Gubellini, Carlo E.	General Management	302	3255
Hehre, Robert J.	Accounting	404	3240
Higgins, Richard B.	Human Resources	305	3257
Hobart, Christine L.	Human Resources	305	3257
Huth, William L.	Management Science	213	3252
Janell, Paul A.	Accounting	404	3241
Kainen, Timm L.	Human Resources	305	3257
Keith, Lyman A.	General Management	322	3236
Keith, Richard L.	Accounting	404	3243
Keleher, Maryellen	Administration	205	2714
Kent, Carolyn V.	Finance	413	3249
King, John F.	Finance	213	3252
Kinnunen, Raymond M.	General Management	322	3236
Lane, Michael R.	Accounting	404	3242
Lawler, Susan V.	Administration	205	2714
Leary, John J.	Administration	212	3272
Lee, Denis M.	Accounting	404	3240
Lieb, Robert C.	General Management	322	3236
Lindhe, Richard	Accounting	404	3241
Lynch, Jeanne M.	General Management	322	3236
Malchman, Lawrence H.	Accounting	404	3241
Marple, Wesley W., Jr.	Finance	413	3249
McCarthy, Daniel J.	General Management	302	3255
McCarty, Paulette A.	Human Resources	305	3257
McCaskey, Patrick H.	Marketing	414	3260
McDonald, Phillip R.	Marketing	414	3260
McDonough, Edward F., III	Human Resources	305	3257
Meddaugh, E. James	Accounting	404	3243
Minichiello, Robert J.	Marketing	414	3260
Moore, Thomas E.	Administration	205	2714
Morris, Paul M.	Management Science	322	3236
Nelson, Carl W.	Management Science	213	3252
Olive, Russell W.	Accounting	404	3240

Parsons, Robert A.	Management Science	302	617-437-3255
Patillo, Donald M.	Finance	413	3249
Priem, Andre P.	Human Resources	302	3255
Rao, Ashok	Management Science	213	3252
Reitz, Barbara	Administration	202	3230
Samii, Issa E.	Finance	413	3248
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Welch, Jonathan B.	Finance	413	3267
Wertheim, Edward G.	Human Resources	305	3257
Wheeler, Bric A.	Administration	212	3272
Willet, Edward R.	Finance	413	3266
Winston, Rudolph, Jr.	Human Resources	305	3257
Wiseman, Frederick	Marketing	414	3260
Vidulich, Barbara B.	Accounting	404	3243
Yilmaz, Mustafa R.	Management Science	322	3236
Young, Robert F.	Marketing	414	3260

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Suburban Campus



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Graduate School of Business Administration
205 Hayden Hall
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115

August Issue



Northeastern University Bulletin

University College
Part-Time Programs
1979-1980

August Issue

part-time day and evening
undergraduate programs in:
business administration
health professions
law enforcement
arts and sciences
education
therapeutic recreation services
core career courses for women

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360 Huntington Avenue
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617-437-2400

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NEW ENGLAND
ASSOCIATION
OF SCHOOLS
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The Northeastern University catalog contains *current information* regarding the University calendar, admissions, degree requirements, fees, and regulations, and such information is not intended to be and should not be relied upon as a statement of the University's contractual undertakings.

Northeastern University reserves the right in its sole judgment to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures and standards, degree requirements, fees, and academic schedule whenever it is deemed necessary or desirable, including, without limitation, changes in course content, the rescheduling of classes, canceling of scheduled classes and other academic activities and requiring or affording alternatives for scheduled classes or other academic activities, in any such case giving such notice as is reasonably practicable under the circumstances.

We at Northeastern will do our best to make available to you the finest education we can provide, the most stimulating atmosphere in which to learn, and the most congenial conditions under which you may enjoy the learning experience. But the quality and the rate of progress of your academic career is in large measure dependent upon your own abilities, commitment, and effort. You will be a full participant in an educational partnership. We will and, indeed, can only make the opportunities available to you; it is up to you to take advantage of them.

This is equally true with your career upon graduation. We cannot guarantee that you will obtain any particular job; that will depend upon your own skills, achievement, presentation, and other factors such as market conditions at that time. Similarly, in many professions and occupations there are increasing requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These may change during the period of time when you are at Northeastern and they may vary from state to state. While we will be ready to help you find out about these requirements and changes, it is your responsibility to initiate the inquiry because we cannot know what your expectations and understandings are unless you tell us.

In brief, what we are saying to you is that we are here to offer you educational opportunities and choices and to assist you in finding the direction in which you want to steer your educational experience.

But you are a partner in this venture with an obligation and responsibility to yourself.

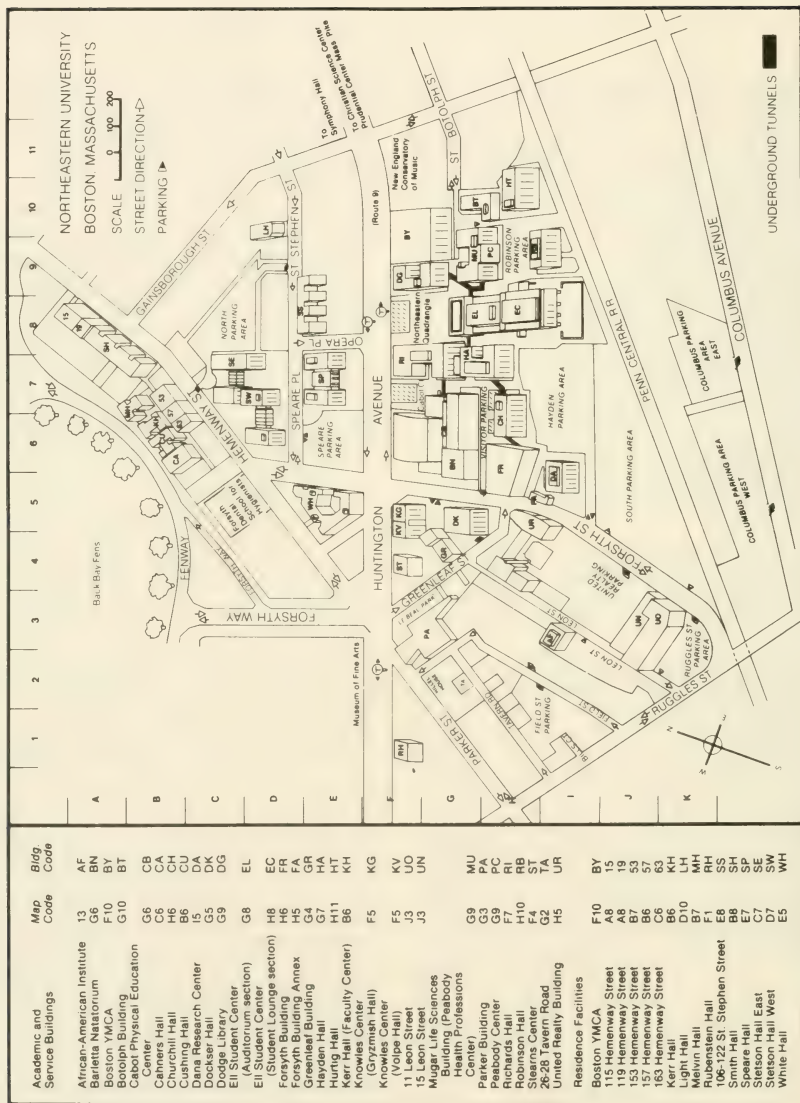
Equal Opportunity Policy Northeastern University is committed to a policy of providing equal opportunity for all. In all matters involving admissions, registration, and all official relationships with students, including evaluation of academic performance, the University insists on a policy of nondiscrimination. Northeastern University is also an equal opportunity employer; it is institutional policy that there shall not be any discrimination against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or on the basis of being a handicapped but otherwise qualified individual. In addition, Northeastern takes affirmative action in the recruitment of students and employees. Inquiries concerning our equal opportunity policies may be referred to the University Affirmative Action Officer and/or the Title IX coordinator.

The person responsible for coordinating compliance efforts and for investigating any complaints of discrimination is Dean Ellen Jackson, 175 Richards Hall, telephone 617-437-2133.

Delivery of Services The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing educational or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, which causes include, without limitation, power failure, fire, strikes by University employees or others, damage by the elements, and acts of public authorities. The University will, however, exert reasonable efforts, when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities, or performance, but its inability or failure to do so shall not subject it to liability.

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University College Offices

Office for General Information	437-2400	102 Churchill Hall
Office of the Registrar	437-2300	120 Hayden Hall
Burlington Campus	272-5500	
Burlington (High School)	273-1870	
Brockton Campus	584-2444	
Framingham Campus	877-2333	
Marshfield Campus	837-1835	
Medford Campus	396-9824	
Milford Campus	473-2565	
Norwood Campus	769-4926	
Reading Campus	944-6005	
Revere Campus	289-8113	
Sandwich Campus	888-1957	
Weymouth Campus	335-9112	

Regular Office Hours

Boston		
120 Hayden Hall	Monday-Friday	8:30 a.m.-8:30 p.m.
102 Churchill Hall	Monday-Friday	8:30 a.m.-8:30 p.m.
	Saturday	8:30 a.m.-1:00 p.m.
Burlington (Suburban Campus)	Monday-Friday	8:00 a.m.-10:00 p.m.
	Saturday	8:00 a.m.-1:00 p.m.
Brockton (Cardinal Spellman High School)	Wednesday-Thursday	5:30-10:00 p.m.
Framingham North High School	Monday-Thursday	5:30-10:00 p.m.
Marshfield (Furnace Brook Middle School)	Tuesday & Thursday	5:30-10:00 p.m.
Medford High School	Tuesday & Thursday	5:30-10:00 p.m.
Milford High School	Tuesday	5:30-10:00 p.m.
Norwood Junior High School	Monday-Wednesday	5:30-10:00 p.m.
Reading (Austin Prep.)	Tuesdaay	5:30-10:00 p.m.
Revere High School	Tuesday & Thursday	5:30-10:00 p.m.
Sandwich High School	Monday & Wednesday	5:30-10:00 p.m.
Weymouth North High School	Monday-Thursday	5:30-10:00 p.m.

Summer Office Hours

Boston		
102 Churchill Hall	Monday-Thursday	8:30 a.m.-8:30 p.m.
	Friday	8:30 a.m.-4:30 p.m.
	Saturday	Closed
120 Hayden Hall	Monday-Thursday	8:30 a.m.-8:30 p.m.
	Friday	8:30 a.m.-4:30 p.m.
Burlington	Monday-Friday	8:00 a.m.-10:00 p.m.
	Saturday	Closed

1979-1980 Academic Calendar

Fall Quarter 1979

Classes Begin Monday, September 24, 1979

Fall Registration Dates

Boston	5:30-8:00 p.m. 9:00 a.m.-12 noon 5:30-8:00 p.m.	Tuesday-Friday, September 4-7 Saturday, September 8 Monday-Thursday, September 10-13
Burlington	5:30-8:00 p.m. 12 noon-8:00 p.m.	Monday-Thursday, September 10-13 Tuesday, September 11
Brockton (Cardinal Spellman H.S.)	5:30-8:00 p.m.	Thursday, September 6 and Wednesday, September 12
Framingham North H.S.	5:30-8:00 p.m.	Tuesday, September 4 and Monday, September 10
Marshfield (Furnace Brook Jr. High)	5:30-8:00 p.m.	Tuesday, September 4 and Thursday, September 13
Medford H.S.	5:30-8:00 p.m.	Tuesday, September 4 and Thursday, September 13
Milford H.S.	5:30-8:00 p.m.	Tuesday, September 4 and Tuesday, September 11
Norwood Jr. H.S. North	5:30-8:00 p.m.	Wednesday, September 5 and Wednesday, September 12
Reading (Austin Prep.)	5:30-8:00 p.m.	Tuesday, September 4 and Tuesday, September 11
Revere H.S.	5:30-8:00 p.m.	Tuesday, September 4 and Thursday, September 13
Sandwich H.S.	5:30-8:00 p.m.	Wednesday, September 5 and Wednesday, September 12
Weymouth North H.S.	5:30-8:00 p.m.	Wednesday, September 5 and Tuesday, September 11
Fall Quarter Classes Begin		Monday, September 24
Columbus Day Observed	No Classes	Monday, October 8
Veteran's Day Observed	No Classes	Monday, November 12
Thanksgiving Recess	No Classes	Thursday-Saturday, November 22-24
Final Examination Period		Monday-Saturday, December 10-15

Winter Quarter 1980

Classes Begin Wednesday, January 2, 1980

Winter Registration Dates

Boston	5:30-8:00 p.m.	Monday-Friday, December 3-7
Burlington	5:30-8:00 p.m.	Monday-Thursday, December 3-6
Brockton (Cardinal Spellman H.S.)	5:30-8:00 p.m.	Thursday, December 6
Framingham North H.S.	5:30-8:00 p.m.	Monday, December 3 and Tuesday, December 4
Marshfield (Furnace Brook Jr. High)	5:30-8:00 p.m.	Tuesday, December 4
Medford H.S.	5:30-8:00 p.m.	Tuesday, December 4
Milford H.S.	5:30-8:00 p.m.	Tuesday, December 4
Norwood Jr. H.S. North	5:30-8:00 p.m.	Monday, December 3 and Wednesday, December 5
Reading (Austin Prep.)	5:30-8:00 p.m.	Tuesday, December 4

Revere H.S.	5:30-8:00 p.m.	Tuesday, December 4
Sandwich H.S.	5:30-8:00 p.m.	Wednesday, December 5
Weymouth North H.S.	5:30-8:00 p.m.	Wednesday, December 5 and Thursday, December 6
Christmas Vacation	No Classes	Monday-Wednesday, December 17-January 2
Winter Quarter Classes Begin		Wednesday, January 2
Martin Luther King's Birthday	No Classes	Tuesday, January 15
Washington's Birthday Observed	No Classes	Monday, February 18
Final Examination Period		Monday-Saturday, March 17-22
Spring Recess (or make-up period for lost snow days)		Monday-Saturday, March 24-29

Spring Quarter 1980

Classes Begin Monday, March 31, 1980

Spring Registration Dates

Boston	5:30-8:00 p.m.	Monday-Friday, March 10-14
Burlington	5:30-8:00 p.m.	Monday-Thursday, March 10-13
Brockton (Cardinal Spellman H.S.)	5:30-8:00 p.m.	Thursday, March 13
Framingham North H.S.	5:30-8:00 p.m.	Monday, March 10 and Tuesday, March 11
Marshfield (Furnace Brook Jr. High)	5:30-8:00 p.m.	Tuesday, March 11
Medford H.S.	5:30-8:00 p.m.	Tuesday, March 11
Milford H.S.	5:30-8:00 p.m.	Tuesday, March 11
Norwood Jr. H.S.	5:30-8:00 p.m.	Monday, March 10 and Wednesday, March 12
Reading (Austin Prep.)	5:30-8:00 p.m.	Tuesday, March 11
Revere H.S.	5:30-8:00 p.m.	Tuesday, March 11
Sandwich H.S.	5:30-8:00 p.m.	Wednesday, March 12
Weymouth North H.S.	5:30-8:00 p.m.	Wednesday, March 12 and Thursday, March 13
Spring Quarter Classes Begin		Monday, March 31
Patriot's Day Observed	No Classes	Monday, April 21
Memorial Day Observed	No Classes	Monday, May 26
Final Examination Period		Monday-Saturday, June 9-14
Commencement		Sunday, June 15

Summer Quarter 1980

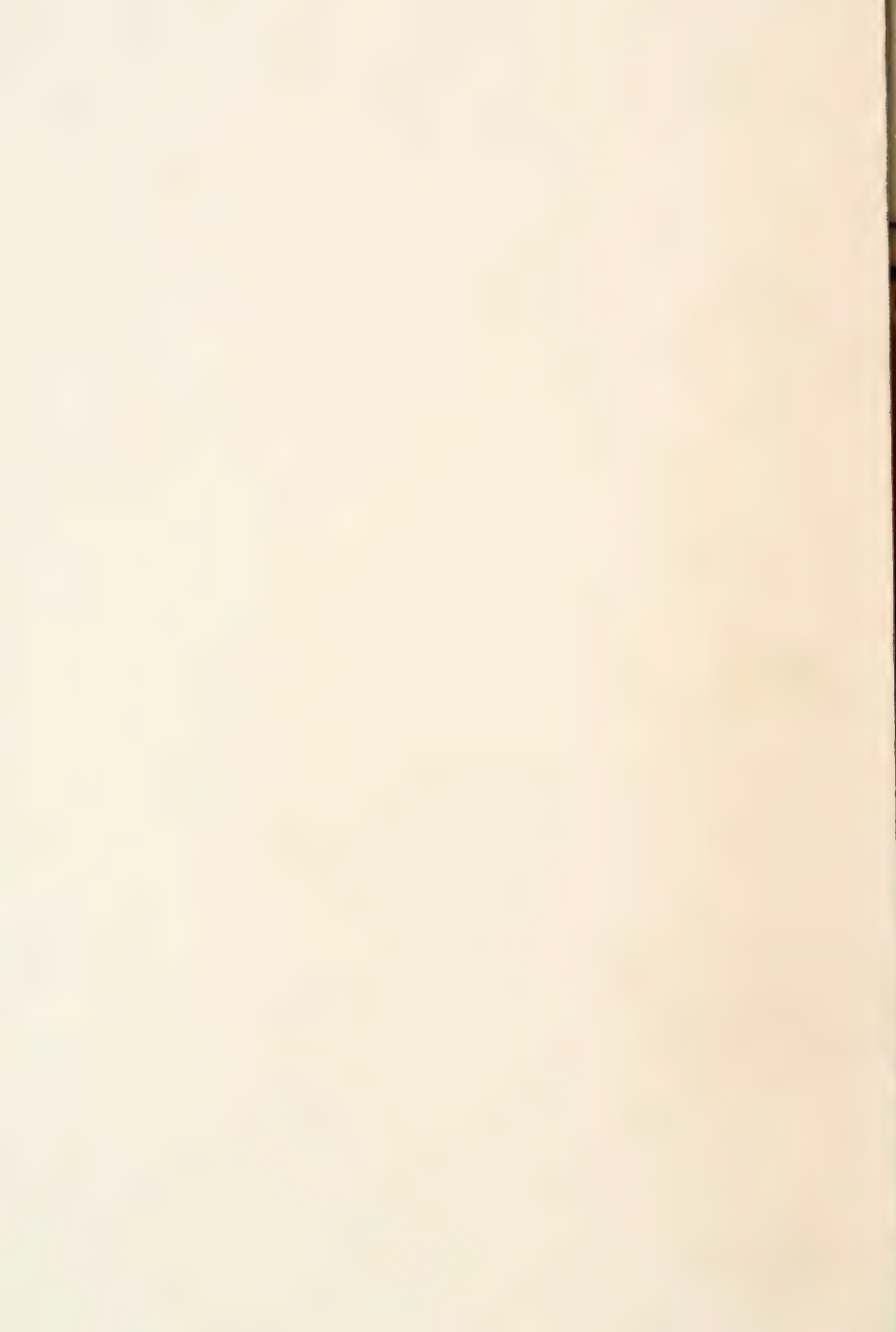
Classes Begin Monday, June 16, 1980

Registration for entire Summer Quarter

Boston	5:30-8:00 p.m.	Monday-Thursday, June 2-5
Burlington	5:30-8:00 p.m.	Tuesday, June 3
Summer Quarter Classes Begin		Monday, June 16

Registration for second five-week term

Boston	5:30-8:00 p.m.	Monday, July 14 and Tuesday, July 15
Burlington	5:30-8:00 p.m. 12 Noon-8:00 p.m. 5:30-8:00 p.m.	Monday, June 2 Tuesday, June 3 Wednesday, June 4 and Thursday, June 5
Independence Day Observed	No Classes	Friday, July 4
Labor Day Observed	No Classes	Monday, September 1
Final Examination Period		Held during last class session of each term



The University

Founded in 1898, Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. By special enactment, the State Legislature has given the University general degree-granting powers. The University is governed by a Board of Trustees elected by and from the Northeastern University Corporation, a body of nearly 200 distinguished business and professional men and women.

From its beginning, Northeastern University's dominant purpose has been to identify community educational needs and to meet these in distinctive and serviceable ways. The University has not duplicated the programs of other institutions, but has pioneered new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, under which students alternate periods of work and study. This time-tested method of education offers students the opportunity to gain valuable practical experience as an integral part of their college programs and to contribute to the financing of their education. All Northeastern's undergraduate colleges operate on the Cooperative Plan, which requires five years for the student to earn a degree. The College of Liberal Arts also offers a four-year noncooperative option. Several of Northeastern's graduate schools have structured their programs to include the features of cooperative education.

In the field of adult education, Northeastern University offers graduate and undergraduate degree programs and non-credit programs which are designed to meet the needs of adults who wish to further their education on a part-time basis.

All formal courses of study leading to degrees in the graduate division, Lincoln College, and University College are approved by the undergraduate faculties concerned, and are governed by the same qualitative and quantitative standards as the regular day curricula. Courses are scheduled in the day and evening at Northeastern's campuses in Boston, Burlington, Brockton, Framingham, Marshfield, Medford, Milford, Norwood, Reading, Revere, Sandwich, and Weymouth.

Northeastern University is authorized under federal law to enroll non-immigrant alien students.

For more information about the undergraduate colleges, their programs, or the cooperative plan of education, contact the Admissions Office, North-



eastern University, 360 Huntington Avenue, Boston, Massachusetts 02115, Tel. (617) 437-2200.

Undergraduate Colleges

College of Arts and Sciences The College of Arts and Sciences offers majors in the arts and sciences leading to the Bachelor of Arts or Bachelor of Science degrees. Curricula are normally four years in length on a full-time plan or five years in length on the Cooperative Plan.

Boston-Bouvé College Boston-Bouvé College offers four major programs of study: physical education, recreation and leisure studies, and health education, leading to the degree of Bachelor of Science in Education; and physical therapy, leading to the degree of Bachelor of Science in Physical Therapy.

College of Business Administration The College of Business Administration offers programs of study in principal fields of business leading to the Bachelor of Science degree in Business Administration.

The College also sponsors a Center for Management Development, which annually conducts intensive programs designed to provide professional growth for experienced managers. The plan of instruction, based on a modification of the Northeastern Cooperative Program, permits the participants to maintain their job responsibilities during the five-month period of the course. The Management Development Program is conducted at Andover, Massachusetts, on the campus of Andover Academy. The Center also conducts the Management Workshops scheduled on twelve Fridays, offering four core areas of management study.

The Bureau of Business and Economic Research provides administrative assistance on research projects carried out under faculty leadership and supervision.

College of Criminal Justice The College of Criminal Justice offers a full-time day curricula on the Cooperative Plan leading to the degree of Bachelor of Science.

College of Education The College of Education offers programs leading to the degree of Bachelor of Science in Education. Students in these programs have the opportunity to prepare for professional service as Elementary and Secondary school teachers, Speech-Language Pathologists or Audiologists, Music Education and Human Services workers.

College of Engineering The College of Engineering offers five-year cooperative curricula in civil (including an environmental engineering option), mechanical, electrical (including a power systems option and a computer engineering option), chemical, and in-

dustrial engineering leading to the degree of Bachelor of Science with specification according to the engineering department in which the student qualifies. A more general program without specification leading to the Bachelor of Science degree is offered where students design their curriculum around a core of science, engineering science, and engineering courses (for example, computer science). For highly qualified students, most departments offer a five-year program leading to both bachelor's and master's degrees; students carry course overloads beginning in the third year. The College also offers during evening hours part-time programs leading to Bachelor of Science degrees in Civil, Mechanical, and Electrical Engineering, extending over eight years and meeting the same qualitative and quantitative standards of scholarship as the day curricula.

Lincoln College Lincoln College offers engineering technology programs leading to the degrees of Associate in Engineering, Associate in Science, and Bachelor of Engineering Technology. These programs are made available as:

- (a) A full-time day curricula on the Cooperative Plan leading to the degree of Bachelor of Engineering Technology (B.E.T.) in Mechanical and Electrical Engineering.
- (b) A part-time evening program including pre-technology preparatory courses and degree programs leading to the Associate in Engineering (A.E.); and the Bachelor of Engineering Technology (B.E.T.) in Civil, Mechanical, and Electrical Engineering. The Associate in Science degree may be earned in the mathematical, physical, and chemical sciences.

The day B.E.T. program is often useful for the high school graduate or the student transferring from a community college or technical institute who desires the full-time day curricula on the Northeastern Cooperative Plan.

In addition to its traditional curricula, Lincoln College Evening School offers interdisciplinary and certificate programs providing technological and professional development opportunities to meet special needs of the part-time student.

College of Nursing The College of Nursing offers programs leading to a Bachelor of Science degree in nursing, with special programs designed for licensed practical nurses or registered nurses.

College of Pharmacy and Allied Health Professions The College of Pharmacy and Allied Health Professions offers five-year cooperative curricula leading to the degree of Bachelor of Science in Pharmacy, Bachelor of Science in Respiratory

Therapy, Bachelor of Science in Toxicology, and to the Bachelor of Science degree with majors in medical laboratory science and medical record administration. Associate degree programs are offered in medical laboratory technology, respiratory therapy, and dental hygiene. In cooperation with the medical schools and teaching hospitals in the Boston area, the college offers a professional program for physician assistants.

University College University College, so called because it draws upon the resources of the other colleges of the University, offers part-time day and evening programs in liberal arts, business administration, law enforcement, education, health professions, and therapeutic recreation service programs, leading to the Associate in Science, Bachelor of Arts, and Bachelor of Science degrees. It does not duplicate the offerings of the day colleges, but provides curricula which cut across traditional subject-matter areas to meet the particular needs of adult students. Students may pursue a degree or simply take courses, based on needs and interests, up to a total of 18 quarter hours of credit. Courses are offered in Boston as well as Burlington, Framingham, Medford, Milford, Revere, Sandwich, Weymouth, Brockton, Norwood, Marshfield and Reading.

Adult Day Programs refers to University College courses that are offered Monday through Friday, 9:00 a.m. to 5:00 p.m., to meet the needs of adults with family or other obligations who wish to engage in part-time study during the day. In addition to the daytime offering of regular University College credit courses, Adult Day Programs also offers daytime workshops and conferences, sometimes over weekends, with the option for credit. Adult Day Programs are offered primarily on the Boston and Burlington campuses, with a limited number of courses offered at other off-campus locations.

Students may enroll as degree candidates or elect single courses appropriate to their needs and interests. Courses are scheduled in the day and evening at the Boston Campus, Suburban Campus in Burlington, and other off-campus locations near Boston.

Alternative Freshman-Year Program A special Alternative Freshman Year Program has been developed in collaboration with University College to serve some students who seek admission to the Basic Colleges. If the professional counselors in the Department of Admissions identify an applicant who seems to have a reasonable chance for success in college work, but has a secondary school record of uneven quality, they may recommend that such a student enroll in the Alternative Freshman Year Program, where his or her individual needs could be better served. Under this plan, the students are provided with a

self-paced, flexible pattern of instruction, allowing them to take as few or as many courses as they can handle successfully. This program also provides students with an opportunity to gain confidence in doing college level work and to sample different areas of interest prior to committing themselves to a specific major field of study.

Graduate Schools

For more information about the graduate schools and their programs, contact the individual school.

Actuarial Science Master of Science in Actuarial Science.

Arts and Sciences The Master of Arts degree may be earned in economics, English, history, political science, psychology, sociology, and social anthropology. The Master of Science degree is available in biology, chemistry, economics, mathematics, and physics. The Master of Science in Health Science and the Master of Public Administration degrees are also offered. In addition, there are programs leading to the Doctor of Philosophy Degree in biology, chemistry, economics, mathematics, physics, psychology, and sociology.

Boston-Bouvé College Master of Science with specializations in physical education and recreation and leisure studies.

Business Administration Master of Business Administration.

Criminal Justice Master of Science in Criminal Justice; in conjunction with the Institute of Chemical Analysis, Application and Forensic Science, the Master of Science and Doctor of Philosophy in Forensic Chemistry.

Education Master of Education, the Certificate of Advanced Graduate Study, and Doctor of Education.

Engineering Master of Science Degrees are offered with course specifications in the fields of Civil, Chemical, Electrical, Industrial, Mechanical, Transportation, and Engineering Management. A six year program leading to both a bachelor's and master's degree is offered in Electrical Engineering, Mechanical Engineering, and Power Systems. Professional Engineers Degrees are offered in Electrical, Industrial, and Mechanical Engineering. Ph.D. Degrees are offered in Civil, Chemical, Electrical, and Mechanical Engineering. A Doctor of Engineering Degree in Chemical Engineering is offered in addition to the Ph.D.

Law The School of Law offers a full-time program of professional instruction leading to the degree of Juris Doctor (J.D.). The three-year curriculum includes

twelve months of experience in law offices, governmental agencies, or other law-related employment. There are no courses for part-time or evening students.

Pharmacy and Allied Health Professions Master of Science with specialization in Clinical Chemistry, Hospital Pharmacy, Medicinal Chemistry, Pharmacology, Medical Laboratory Science, Radiopharmaceutical Science, and Doctor of Philosophy in Medicinal Chemistry with Specialization in Biopharmaceutics, Clinical Chemistry, Medical Laboratory Science, Pharmacology, and Radiopharmaceutical Science, as well as an Interdisciplinary Doctor of Philosophy program in Forensic Chemistry.

Professional Accounting A five-quarter curriculum leading to the degree of Master of Science in Accounting.

Insurance Institute

The Insurance Institute is sponsored by local insurance organizations and companies. It offers a number of non-credit courses in preparation for the Chartered Life Underwriter and Chartered Property-Casualty Underwriter Designations as well as for the General Insurance, Insurance Adjuster, and Risk Management Certificates. A Master of Science degree in Financial Services is offered. (437-2506).

Center for Continuing Education

The Center for Continuing Education was established to relate the University to the needs of its community in a period of accelerated change. Its programs are composed of seminars, conferences, institutes, forums, and a wide variety of special courses designed to serve specific needs. The Division of Special Programs, working cooperatively with trade associations and professional societies, offers several programs dealing with current needs and problems. Through its Division of Community Services, working with governmental agencies and community organizations, the Center is becoming increasingly involved in social problems on both the local and national level.

Many of these programs are conducted at Henderson House, Northeastern University's conference center in Weston, Massachusetts.

Research Activities

The facilities of the University are engaged in a wide variety of basic research projects in business, science, social science, pharmacy, and engineering. These are coordinated by the Dean of Research, whose services are University-wide and available to the faculties of all the Colleges.

Although Northeastern is primarily concerned with

undergraduate and graduate instruction, the University believes that the most effective teaching and learning takes place in an environment characterized by research activities directed toward extending the frontiers of knowledge.

Buildings and Facilities

The main campus of Northeastern University is located at 360 Huntington Avenue in the Back Bay section of Boston. Many of the city's famous cultural, educational, and philanthropic institutions are situated in the Back Bay, including the Museum of Fine Arts, Symphony Hall, Horticultural Hall, the Isabella Stewart Gardner Museum, the Harvard teaching hospitals, and many schools and colleges. Most are within walking distance of Northeastern University.

Major transportation facilities serving the Boston area are Logan International Airport, two rail terminals, bus terminals serving inter- and intrastate lines, and MBTA subway-bus service within the metropolitan-suburban area. There is a subway stop in front of the campus. For motorists, the best routes to the campus are the Massachusetts Turnpike (Exit 22) and Route 9, of which Huntington Avenue is the intown section.

The campus of 50 acres is divided by Huntington Avenue, with the main educational buildings on one side and dormitories on the other. The principal buildings, all of which have been constructed since 1938, are of glazed brick in contemporary classic style. Most are interconnected by underground passageways.

Carl S. Eli Student Center

The Carl S. Eli Student Center provides facilities for student recreation and for extracurricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is part of the Center. Also included are special drama facilities, a ballroom, main lounge, fine arts exhibition area, student offices, conference rooms, and a dining area seating more than 1,000.

The University Library

The University Library System includes the Dodge Library and the three graduate libraries: Chemistry, 112 Hurtig Hall that includes Chemical Engineering, Biology, Pharmacy and the Health Sciences; Physics/Electrical Engineering, 324 Dana Hall; and Mathematics/Psychology, 531 United Realty Building. The Suburban Campus Library supports the programs at Burlington. Other collections are Marine Science at Nahant, and Center for Management Development at Andover. There is also the Law Library located in the Knowles Center, and the Curriculum Resources Library in Cahners Hall.

The University Library collections consist of over 424,000 bound volumes, and 452,300 microform



volumes. The periodical titles number 4,000, additional continuation titles of 1,243, and 10,000 sound recordings.

1. The Reference Collection in the Cabot Reading Room on the main floor of the Dodge Library contains 20,000 volumes. This collection is of major importance to anyone using the Library. The researcher should be aware of the source books, handbooks, bibliographies, etc., before beginning an investigation of the literature.

The Reference Division includes the Government Documents Collection located in 14 Dodge, and the Microforms Collection located in 108 DG. Additional sources of information are the Business Services, Technical Reports, Annual/Company Reports, and the Information File for pamphlet materials.

2. The Periodical Collection in the Webster Reading Room on the main floor consists of Indexing and Abstracting Services, and the current periodicals, mainly in literature, humanities, social sciences, and general science, as well as foreign and domestic newspapers.

This collection supports the Reference Collection and brings up-to-date the General Collection by encompassing the latest developments in all fields of knowledge.

The Periodical Stacks are adjacent to the collection and are serviced by the library staff.

3. The General Collection is located on the three floors and two stack levels of the Dodge Library indicated by posted floor plans and guides available at the Information Desk.

4. The Reserve Book Collection is located in 204 Dodge. This is an important and heavily-used collection of textbooks and assigned reading to support the classroom lecture, laboratory, and for further in-depth information.

5. The Public Catalog located on the main floor includes author, title, and subject cards for the foregoing collections, except for documents, technical reports, and complete entries for periodicals which will be found in catalogs in those areas. The Public Catalog includes both the Dewey Decimal classification, and since April, 1971, the Library of Congress classification.

6. The Circulation Department manages the organization of the General Collection. Materials are charged out and returned at the Circulation Desk. A daily computer printout of items on loan is available to assist in locating books not found on the shelves.

7. The Inter-Library Loan Department is located in 18 Dodge. This service should be used for materials not available in the system and for serious research.

8. The Music Reference Service is located in 406 Dodge. This collection of books, scores, records, and

tape cassettes is for assigned listening and personal enjoyment. The collection contains both music and spoken word.

9. The Learning Resources Center, 406 Dodge, is a service for programmed and language instruction utilizing audio/visual/video equipment teaching programs to support classroom work and independent study.

10. It should be understood that the Divisional Libraries, the Burlington Campus, and the Law School Library have the same services and card catalogs to support those disciplines.

Library Hours

Dodge Library	
Mon.—Thurs.	7:45 a.m. to 10:00 p.m. (10:00 p.m. to midnight) *
Friday	7:45 a.m. to 7:30 p.m.
Saturday	12:00 noon to 5:00 p.m. (5:00 p.m. to 10:00 p.m.) *
Sunday	12:00 noon to 5:00 p.m. (5:00 p.m. to midnight) *

*References and Periodicals; for study only.

Divisional Libraries	
Mon.—Thurs.	8:30 a.m. to 10:00 p.m.
Friday	8:30 a.m. to 7:30 p.m.
Saturday—Sunday	Closed
Suburban Campus Library	
Mon.—Fri.	8:30 a.m. to 9:00 p.m.
Saturday	8:30 a.m. to 1:00 p.m. (alternate Saturdays)
Sunday	Closed

Office of Services for the Handicapped

Handicapped students and employees can obtain assistance and support from the Office of Services for the Handicapped, located in Room 5, Ell Center. Ruth Bork is responsible for coordinating the University's services, activities, and facilities that are accessible to and usable by handicapped persons. The OSH telephone number is 437-2675.

Counseling and Testing Center

Counseling and testing to aid a student or prospective student with career, educational, or personal concerns is available days and certain weekday evenings until 8:30 p.m. Information and appointments may be obtained by calling 437-2142, or by visiting the Counseling and Testing Center, 302 Ell Student Center.

Cabot Physical Education Center

The Godfrey Lowell Cabot Physical Education Center is one of the best equipped in New England. It contains four basketball courts, an athletic cage, a

women's gymnasium, and a rifle range, as well as administrative offices for the Department of Athletics and for the Physical Education Department of Boston-Bouv  College.

The Barletta Natatorium houses a 105-foot swimming pool, a practice tank for the crew, handball courts, and shower and dressing facilities.

Dockser Hall

Charles and Estelle Dockser Hall, completed in 1968, houses a large gymnasium, dance studio, motor performance laboratory, college library, community recreation laboratory, folk arts center, dark room, recreation resources area, locker rooms, offices, classrooms, conference room and lounge, storage facilities, and a research laboratory.

Suburban Campus

The Suburban Campus, located near the junction of Routes 128 and 3 in Burlington, Massachusetts, was established to meet the needs of individuals and of industry in the area.

In addition to graduate courses in engineering, business administration, education, portions of undergraduate programs leading to the associate and bachelor's degrees, special programs for adults, and non-credit state-of-the-art programs are offered.

Henderson House

The University's conference center, Henderson House, is located in Weston, Massachusetts. The Center for Continuing Education conducts short-term courses, seminars, and special institutes for business, professional, and research groups. Henderson House is located twelve miles from the main campus.

Warren Center

The Warren Center is located on 165 acres in Ashland, Massachusetts, thirty miles west of Boston. The Center provides an outdoor laboratory for students of physical education, and recreation and leisure studies at Northeastern University's Boston-Bouv  College. The Warren Center is also available to Northeastern University faculty, staff, alumni, and students as well as to other educational groups seeking enrichment in an outdoor setting. The Center offers woods, fields, a lake, tennis courts, an archery range, a lacrosse field, a ropes course, and an outdoor pavillion and recreational sports area. Its facilities include a lodge, five winterized and heated cottages, each capable of housing twenty-four people in dormitory-style sleeping rooms, and a health lodge with nurses' quarters, treatment room, and infirmary area. For more information

about the Warren Center's facilities and/or programs, contact:

Director

The Warren Center

529 Chestnut Street

Ashland, Massachusetts 01721

Telephone: 617-881-1142

Marine Science Institute

The Marine Science Institute at Nahant, Massachusetts, located about twenty miles northeast of Boston, is a research and instructional facility primarily engaged in studies of marine biology and oceanography. The Institute is operated throughout the year.

University College

John W. Jordan, Acting Dean, University College

The Programs

University College is committed to the education of mature, adult students who wish to live effectively in today's complex society. The programs in the College are specifically designed to satisfy the changing professional, cultural, and social needs and interests of adults. They are constantly evaluated, and redesigned when necessary, to keep pace with students and community.

Degree programs have been developed in 39 major fields of study in the areas of business administration, education, arts and sciences, law enforcement, recreation, and health. Courses are offered on a part-time basis Monday through Saturday during day and evening hours convenient for adults. Students may elect single courses or may enroll in full-degree programs leading to the Associate in Science or the Bachelor's degree. Short-term seminars are also offered for credit. Classes are scheduled in several locations which are accessible to the urban and the suburban community.

The Faculty

Approximately 1,000 men and women comprise the part-time teaching staff of University College. Included are members of the full-time faculty of Northeastern University and other educational institutions in New England, as well as outstanding New England business and professional leaders with backgrounds of training and experience in specialized areas. The faculty are selected because they are highly successful in their fields and are well qualified to provide sound methods of teaching for adults in an interesting, inspiring, and effective manner.

The Student Body

The student body of University College represents the diversity of interests that is one of the basic strengths in adult education. Approximately 13,000 students range in age from 18 years to beyond retirement. Some enroll immediately after high school graduation. Others may have graduated several years ago.

University College students can have full-time commitments to their jobs, families, or other responsibilities. They may enroll in a single course or in a full degree curriculum, depending on whether their goal is career related or for personal enrichment.



University College and Adult Education Administrative Officers

John W. Jordan, B.S., M.Ed., *Acting Dean of University College*
 Ann A. Barto, B.S., *Assistant Director of Administrative Services*
 Richard J. Comings, A.B., M.A., *Director of Special Programs*
 Joseph N. Connors, B.S., M.P.A., *Assistant Dean and Director of Social Science Programs*
 Edward J. Czarnowski, B.S., Ed. M., C.L.U., *Director of Insurance Institute*
 Michael S. Dvorchak, B.A., M.A., *Associate Dean and Director of Suburban Campus*
 William T. Edgett, A.B., M.A., *Assistant Dean and Director of Counseling*
 David R. Kane, B.S., *Registrar*
 Marjorie Koretsky, B.S., M.Ed., *Assistant Dean and Director of Allied Medical Health Programs*
 Paul D. Maxwell, B.S., M.B.A., *Associate Dean and Director of Business Administration Programs*
 Esther D. McNeill, B.A., *Administrative Assistant*
 Dorothy A. Meckel, A.B., M.A., Ed.D., *Career Development Associate, Women's Career Program*
 Timothy F. Moran, B.S., M.Ed., *Associate Dean and Director of Law Enforcement, Correctional and Security Programs*
 Harold Naidus, A.B., M.S., Ph.D., *Associate Dean and Director of Science Programs*
 Ellen G. O'Brien, B.A., M.Ed., *Assistant Director of Academic and Student Services and Director of Student Activities*
 Robert W. O'Connor, A.B., Ed.M., Ed.D., *Coordinator of Women's Career Program*
 Donald M. Phillips, B.A., *Assistant Registrar*
 Jacqueline Platt, B.S., M.Ed., *Director of Counseling, Suburban Campus*
 Andrew C. Sims, B.S., *Administrative Assistant*
 Kenneth C. Solano, A.B., M.Ed., *Associate Dean and Director of Academic and Student Services*
 Gretchen M. Thompson, B.A., *Assistant to the Director of Academic and Student Services*
 Ralph T. Vernile, Jr., B.S., *Associate Dean of Adult Education and Director of Administrative Services*
 Marilyn S. Wiener, A.B., M.A., *Associate Dean, Director of Humanities Programs*

Executive Committee

John W. Jordan, Chairperson
 Joseph N. Connors
 Marjorie Koretsky
 Paul D. Maxwell
 Timothy F. Moran
 Harold Naidus
 Kenneth C. Solano
 Ralph T. Vernile, Jr.
 Marilyn S. Wiener

Committee on Academic Standing

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 Joseph N. Connors
 Marjorie Koretsky
 Paul D. Maxwell
 Timothy F. Moran
 Harold Naidus
 Kenneth C. Solano
 Marilyn S. Wiener

Committee on Regulations and Discipline

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 Richard J. Comings
 Joseph N. Connors
 Marjorie Koretsky
 Paul D. Maxwell
 Timothy F. Moran
 Harold Naidus
 Kenneth C. Solano
 Marilyn S. Wiener

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Richard J. Comings, Chairperson
 Marvin Lesser
 Paul D. Maxwell
 Timothy F. Moran
 Harold Naidus
 John W. Jordan, *Ex Officio*

Business Administration Curriculum Committee

Paul D. Maxwell, Chairperson
W. Arthur Gagne
Robert Goldberg
Ronald E. Guittarr
Robert Hehre
Thomas J. McNamara
Joel Rosenfeld
Three Student Representatives
John W. Jordan, *Ex Officio*

Law Enforcement Curriculum Committee

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John A. Gavin
Francis R. Hankard
Robert F. Johnson
Joseph M. Jordan
Bernard Manning
Carmen S. Pizzuto
Three Student Representatives
John W. Jordan, *Ex Officio*

Arts and Sciences Executive Committee

Joseph N. Connors
Harold Naidus
Marilyn Wiener
John W. Jordan, *Ex Officio*

Arts and Sciences Curriculum Committee

Joseph N. Connors, Chairperson
Harold Naidus, Chairperson
Marilyn Wiener, Chairperson
Fletcher Boig
L. Gerald Bursey
Harold Goldstein
Lila Leibowitz
Marvin X. Lesser
Charles Karis
Roland Nadeau
Raymond H. Robinson
Robert Wells
Henry Wernitz
Three Student Representatives
Three Part-Time Faculty Representatives
John W. Jordan, *Ex Officio*

Health Professions Curriculum Committee

Marjorie Koretsky, Chairperson
Judy Barr
Sandra Best
Stanley Bozen
Annalee Collins
Richard Comings
Helen Glazer
Craig Melin
Barbara Schulze
Judy Weilerstein
Marilyn Wiener
Two Student Representatives
John W. Jordan, *Ex Officio*

Therapeutic Recreation Curriculum Committee

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Sheryl Fairchild
Sidra Gruss-Zasmosky
Richard Hoffmann
Davis Johnson
Suenje Matthiesen
Jon Oliver
William Ramaskewich
Herbert Richmond
Frank Robinson
John Shank
Janet Swanson
Jenney Watson
John W. Jordan, *Ex Officio*

Academic Policies

Academic and Student Services

Kenneth C. Solano, Associate Dean, Director of Academic and Student Services

William T. Edgett, Assistant Dean, Director of Counseling

Ellen O'Brien, Assistant Director of Academic and Student Services

Gretchen Thompson, Assistant to the Director of Academic and Student Services

Telephone: (617) 437-2400

Changes Academic programs, course content, and rules and regulations are subject to change without notice.

Admission

All registrants who satisfy the requirements as regular or special students are admitted as part-time students in University College without the requirement of filing a formal application in University College. It is advisable for students to have an interview with an Academic Counselor, prior to registration, to help plan their academic program in University College, particularly in cases where previous credit has been earned at other institutions, in order to avoid possible duplication of courses. Because of the diversity of the University College student body in terms of individual background, age, interests, and needs, no entrance examinations are required. In lieu of entrance examinations, a student is expected to maintain a quality point average of at least 2.0 (C average on a four point grading system) in order to be admitted as a degree candidate at the point of matriculation.

Regular Student Status To become a regular student, i.e., to matriculate in one of the programs offered by University College with the intention of earning a degree, a student must petition for this status of degree candidacy in accordance with the prescribed matriculation policy. A student who petitions for matriculation must have completed an approved secondary school program consisting of 15 units of high school courses or the equivalent. A unit represents a year's work in any subject in any approved secondary school constituting approximately a quarter of a full year's work or the equivalent. A four-year day high school course is regarded as representing at least 15 units of work, or 3 units in junior high school and 12



units in a three-year high school. High School Equivalency Certificates are accepted in lieu of actual High School graduation. A student who becomes a degree candidate shall follow the prescribed curriculum program selected.

Special Student Status Special students are those who do not wish to enroll in a degree program, but who are interested in pursuing in any one quarter one or more courses appropriate to their needs or general interests. Credits earned for these courses may be applied to a degree program if the student desires to pursue a degree at a later time.

Matriculation—Procedure for Admission as a Degree Candidate

Matriculation, formal admission as a degree candidate, is mandatory for all students intending to follow a degree program in University College. The procedure is initiated by filing a Petition for Matriculation at the Office of Academic and Student Services, 102 Churchill Hall or at any branch campus office.

A student may be eligible to matriculate under either Option I or Option II.

Option I. (non-transfer student) A student enrolled in University College must matriculate (become a degree candidate) upon completion of at least 18 quarter hours of credit in residence which must include the satisfactory completion of English I, II, III (30.305, 30.306, 30.307) or the equivalent. The student must be a graduate of a regionally-accredited high school or secondary school (an institution having recognition and membership in one of the six regional accrediting associations recognized by the National Commission on Accrediting) or possess a High School Equivalency Certificate. The student must have a residence quality point average of at least 2.0 (C average) and must maintain this minimum quality point average to continue in a matriculated status.

Option II. (transfer student) A student who has petitioned to transfer credits from another regionally-accredited institution of higher education (an institution having recognition and membership in one of the six regional accrediting associations recognized by the National Commission on Accrediting) or who has been tentatively awarded advanced standing credit from other sources such as C.L.E.P. or P.E.P. examinations, must matriculate after completion of one quarter in University College, provided a total of 18 quarter hours of credit have been completed from all sources. The English I, II, III (30.305, 30.306, 30.307) requirement or the equivalent must be satisfied as well as high school or secondary school graduation or possession of a High School Equivalency Certificate. The student

must have a residence quality point average of at least 2.0 (C average) and must maintain this minimum quality point average to continue in a matriculated status.

All matriculated students are required to abide by the academic policies of University College as stated in the latest bulletin.

Advanced Standing Credit

Transfer Credit from Another Institution Subject to the approval of the Director of Academic and Student Services, transfer credit from accredited institutions of higher education (an institution having recognition and membership in one of the six regional accrediting associations recognized by the National Commission on Accrediting) may be accepted when the grade earned and course(s) completed are applicable to the student's program in University College.

A student who wishes to obtain a tentative evaluation of previously earned credits from another institution must file a Petition for Advanced Standing Credit with the Director of Academic and Student Services of University College. The student should then write to the Registrar of the institution(s) previously attended and request that an official (sealed) transcript be forwarded to the Director of Academic and Student Services of University College. The transcript(s) should indicate honorable dismissal, courses completed, credits, and grades earned. Students who have been dismissed from other institutions for academic or other reasons must enclose with their petitions a statement from the dean or other appropriate official of that institution stating reasons for dismissal or probationary status. The statement should include a recommendation for acceptance in University College.

Upon receipt of the above-mentioned material, the Director of Academic and Student Services will issue a tentative evaluation of all previously completed courses as they apply to the student's program. The tentative award will be recorded on the student's transcript when matriculation is approved.

Credit By Examination University College will award credits by examination provided there is no duplication of other previously earned academic credit. Credit is granted for successful completion of appropriate examinations currently available through the College Level Examination Program (CLEP) of the College Entrance Examination Board and through the Proficiency Examination Program (PEP) of the American College Testing Program. Both programs have been designed to assist the student in acquiring college-level credit for knowledge acquired through non-traditional means, such as on-the-job training, educational television, correspondence and extension

study, as well as independent study. Information about these programs is available in the University College office and at the Counseling and Testing Center of the University.

Evaluation of Foreign Educational Credentials

Students requesting an evaluation of Foreign Educational Credentials for transfer credit in University College will be assessed a fee of \$15.00 for the evaluation. The evaluation will be issued by the Director of Academic and Student Services upon receipt of the petition for Advanced Standing Credit, official copies of all transcripts that have been translated into English, and a check in the amount of \$15.00 made payable to Northeastern University.

The official assessment of Foreign Educational Credentials will be made in accordance with current standards for Advanced Standing Credit in University College or as recommended by the Center for International Higher Education Documentation.

The \$15.00 fee will be waived for any University College student who has matriculated prior to requesting the evaluation.

Non-Collegiate Experience Credit

Law Enforcement Students may be granted credit in their program, up to 18 quarter hours, by successfully completing one or more of the non-collegiate credit examinations which have been made available through their program director's office. Examinations are periodically scheduled by the Counseling and Testing Center.

Arts and Sciences Students may petition for non-collegiate experience credit through their major adviser if they are matriculated in an Arts and Sciences program with a departmental major.

Credit cannot be awarded through non-collegiate experience petitions or examinations when an appropriate examination is available through CLEP or PEP.

See pages 86 (Law Enforcement) and 67 (Arts and Sciences) for more details on opportunities for non-collegiate experience credit.

Residence Requirement

Every candidate for the baccalaureate or associate degree must fulfill the minimum residence requirement. The residence requirement is defined as the satisfactory completion in University College, immediately preceding graduation, of at least 45 quarter hours of work in course, with the further provision that at least 12 of the 45 quarter hours must be in the candidate's major field of study. All programs designed to meet the minimum residency requirement must have the approval of the Dean of the College or the Director of Academic and Student Services. A student whose enrollment in a degree program is interrupted for a period

of one year or more will be reinstated into the program in effect at the time of re-entry into University College.

In Absentia Status In the case of a student who, for causes beyond his or her control, moves outside the reasonable commuting area of University College or its branch campuses, and who has completed 135 or more quarter hours of credit in residence (excluding transfer credit), the Committee on Academic Standing will consider a petition to allow the student the privilege of completing degree requirements at some other approved college, provided the remaining courses are completed within two years from the date of initial approval to become a student *in absentia*.

Quality Requirement for Graduation

A cumulative quality point average of 2.00 (an average grade of C) is required for graduation. Advanced standing credits are not averaged in the cumulative score.

Senior Status Procedure All potential degree recipients will be polled during the fall quarter as to their intention to graduate during the current academic year. A Commencement Data Card, indicating a student's wish to be considered for graduation, is required prior to the winter quarter of the final year in residence to be officially designated a degree candidate for the next Commencement Exercise in June. September graduates will be polled during the month of June.

The Office of Academic and Student Services issues Senior Status Reports upon request of the potential graduate throughout the academic year to assist the senior in the final selection of courses required for program completion. Seniors are encouraged to request a Senior Status Report during the summer prior to intended graduation. Petition forms for status reports are available in 102 Churchill Hall on the Boston campus and at the main office of all branch campuses during regular office hours.

Since the University College residence requirement prescribes the completion of at least 45 quarter hours of residence credit immediately preceding graduation, a student who intends to graduate in any academic year may not be allowed to complete courses at any other institution for the purpose of transferring during the final year. Likewise, a senior is not allowed to receive credit via CLEP or PEP examinations during the final year to fulfill program requirements. Under special circumstances exceptions to this policy will be considered by the Committee on Academic Standing provided the student petitions for an exception prior to the winter quarter.

Graduation with Honor Candidates who have achieved distinctly superior attainment in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. To be considered for graduation with honor, a student must have completed a minimum of 72 quarter hours of work at University College. Courses credited by advanced standing will be eliminated in determining honor graduates.

Attendance at Commencement Attendance at commencement for all University College degree candidates is optional. Degree candidates will be polled by the commencement committee in this regard during the spring quarter.

Quality Points

The requirement for graduation from University College is 174 quarter hours for a bachelor's degree and 96 quarter hours for an associate's degree, with attainment of a quality point average of 2.0. Although the credits allowed for acceptable work completed elsewhere by transfer students count toward fulfillment of quantitative graduation requirements, neither the credits nor the grades earned in such courses are included in quality point computations for graduation.

The method of figuring quality points is as follows: each quarter hour credit of A grade is multiplied by 4, B grade by 3, C grade by 2, D grade by 1, and F grade by 0. The total number of quality points, divided by the total number of quarter hour credits completed, shall be the quality point average.

Students receiving an F grade in a required course must repeat the course in its entirety including term work, examinations, and attendance.

Calculation of Quality Point Average 1. When the student has more than one grade in the same course, the most recent grade will be used in the calculation of the quality point average.

2. A grade of I will not be considered in the calculation of quality point average.

3. Although advanced standing credits (ASC) allowed for acceptable work completed at other institutions by transfer students count toward completion of the quantitative credit requirements, neither the credits nor the grades earned in such courses are included in quality point average computations.

For example, a student who has registered for seven courses, cleared a failure in one of them, and received advanced standing credit (ASC) in another, may calculate the quality point average as follows:

Grade Achieved	Numerical Equivalent	Credit Hours	Quality Points
A	4.0	X 4 =	16.0
B	3.0	X 4 =	12.0
C	2.0	X 3 =	6.0
D	1.0	X 3 =	3.0
F	0.0	X 2 =	0.0
FB	3.0	X 2 =	6.0
I	—	X — =	—
ASC	—	X — =	—
Totals 18			43.0
Quality Point Average =			$\frac{\text{Total Quality Points (43.0)}}{\text{Total Credit Hours (18)}} = 2.389$

Dean's List All matriculated students who have taken a minimum of 27 quarter hours in three consecutive quarters (fall, winter, spring) of an academic year and have completed all their courses with a quality point average of 3.0 or better shall be placed on the Dean's List. Each student shall receive a certificate of commendation from the Dean of University College.

Pass-Fail Courses Any student who is not on academic probation and who has completed 39 q.h. of academic work may register for one pass/fail course and, thereafter, for one course on a pass/fail basis for each 15 q.h. of successfully completed work. Written permission of the appropriate academic dean must be obtained for each pass/fail course. At no time may a student register for more than one pass/fail course per quarter.

Such courses will be restricted to free electives outside the major field of specialization, so that no part of the specifically prescribed curriculum will be affected.

The grades recorded on the basis of the pass/fail system of grading will not figure in the computation of the QPA.

Satisfactory completion of the work in all courses taken on the pass/fail system of grading will be designated on the transcript by the letter "S." Unsatisfactory work will be designated on the transcript by the letter "U." Any unsatisfactory grade must be handled according to the existing policy of the University, but must never be cleared through the election of the same course on the basis of the pass/fail system of grading.

An incomplete in a course taken on a pass/fail basis will be designated by the letter "X" on the transcript and must be treated according to the normal procedure for incomplete grades.

Students wishing to use the pass/fail system of

grading for a course must meet all prerequisites for the course and should signify their desire to apply for a specific course on the basis of this system of registration.

The student's decision to take a course on a pass/fail basis must be made prior to the second meeting of the course and no changes will be permitted thereafter.

Class Changes

University College reserves the right to cancel, split, or combine classes when necessary.

Not all the courses listed in this bulletin will be offered. A final list of those classes to be offered will be contained in the University College Schedule of Courses which gives the hours, days, and location of classes. This schedule is issued prior to the fall, winter, spring, and summer quarters.

Emergency Closing of the University Northeastern University has made arrangements to notify students, faculty, and staff by radio when it becomes necessary to cancel classes because of extremely inclement weather. Radio stations WBZ, WEEI, WHDH, WJDA, WCOP, WRKO, WLYN, WKOX, WHAV, and WLLH will announce the University's decision to close.

In addition, the University maintains an emergency snow phone (262-SNOW). Whenever in doubt, call 262-7669 (SNOW) and a taped message will indicate the status of classes.

Registration

Before attending classes, students must report to the registration area to register. All students must complete their registration properly before attending class. Attendance at class, even with the instructor's permission, does *not* constitute registration.

No academic credit will be recorded for students not properly registered.

In order to insure academic success, students are strongly advised to adhere to course prerequisites.

Program Advisers Program advisers are available day and evening by appointment in the University College Office. They are competent to assist the student in planning a program suitable to his or her general educational and career objectives. They can also answer questions relating to degree requirements, course sequence, and proper scheduling of courses. Appointments may be arranged by calling the University College Office (437-2400) or by coming in person to 102 Churchill Hall. There is no charge for this service.

Program advisers are available during registration at all registration sites. No appointment is necessary.

Maximum Course Load New students may elect up to four subjects per quarter without special permission.

Former students who are not on the Dean's List may also elect up to four subjects per quarter without special permission.

Dean's List students may elect any number of subjects per quarter not to exceed eighteen quarter hours without special permission.

Class Attendance

Students are expected to attend all exercises in the subjects they are studying unless excused in advance.

Absence from regularly scheduled exercises in any subject will seriously affect the standing of the student. Consecutive absences may cause the removal of the subject or subjects from the student's schedule.

Absence Because of Illness All students who are absent from school because of extended illness, and who do not wish to be withdrawn, should inform the Registrar's Office by letter.

Withdrawal Policy

Voluntary Withdrawal The student completes a drop course form in the Registrar's Office or notifies the Registrar in writing of his or her intention to withdraw from the course.

Initial Absence Withdrawal If after the first class meeting a student misses two consecutive class meetings of a course, he or she will be withdrawn by the Registrar.

End of Course Withdrawal If, by the ninth or tenth week of the quarter, the Registrar, after examining the attendance book, has every reason to believe the student has dropped from the course, he will officially withdraw the student and so note in the attendance book.

Change of Address

Change of address and/or name should be reported immediately to the Registrar's Office.

Examinations

Term tests are scheduled in each quarter at the option of the instructor and are regarded as part of the term's course work. A final examination will be held at the end of each quarter in each course unless an announcement to the contrary is made.

Missed Final Examinations A student does not automatically have the right to make up a missed final examination. Students must petition for this privilege and must pay a fee of \$5.00 for each special examination when filing for the special make-up exam. All stu-

dents who wish to clear an I (incomplete) grade must pay the fee and file the proper petition in the Registrar's Office, 120 Hayden Hall, or in each off-campus administrative office. Petitions for missed finals must be filed in accordance with the schedule listed below:

Final examination missed during:	File petition no later than:
Fall quarter 1979	January 11, 1980
Winter quarter 1980	April 11, 1980
Spring quarter 1980	July 7, 1980
Summer quarter 1980	September 26, 1980

Students will be notified by mail of when and where to take the missed final examination.

Students who do not take make-up final examinations as scheduled (see below for I grade explanation) and clear an incomplete through the instructor will be billed the \$5.00 make-up exam fee by the Bursar before the I grade is changed.

Class Preparation

It is expected that University College students will spend an average of six to eight hours per week on outside assignments for each course.

Homework Assignments Students are responsible for obtaining their homework assignments by contacting their instructor or another student in their class. Homework assignments are not available in the University College Office.

Grading System

The following system of grading is used. The numerical equivalent for each grade is in parentheses.

- A (4.0)—Outstanding
- B (3.0)—Good
- C (2.0)—Satisfactory
- D (1.0)—Poor
- F (0.0)—Failure
- I (—)—Incomplete
- L—Audit (No Credit)-UC and LC only
- S—Satisfactory (Pass-Fail Grade)
- U—Unsatisfactory (Pass-Fail Grade)
- X—Incomplete (Pass-Fail Grade)
- * —Grade not received

A general average of D is unacceptable and will not allow a student to continue in University College or to receive a degree from Northeastern University. The F grade is a definite failure and requires repetition of the course in its entirety. The I grade is given only when the student fails to take the final examination.

The I Grade The I grade may be given only when the student fails to take the final examination.

An instructor may decide that a student has done so poorly in the course that even a perfect grade in a make-up final could not raise the grade from F, in which case F is the proper grade, irrespective of the missed final.

If the student fails to complete some other major portion of the course work (examination, quizzes, major paper, etc.) a letter grade (A, B, C, D, F) should be assigned. This grade can be changed, upon petition, when the deficiency which led to the assigned letter grade is made up to the satisfaction of and in the manner prescribed by the instructor.

All deficiencies must be made up in the prescribed manner no later than twelve months following the recording of the grade.

Any student who wishes to clear an I grade received more than one year earlier may petition the Academic Standing Committee of University College. The Registrar has been directed to make no exceptions to the one year statutory limit except on the instructions of the Academic Standing Committee of the college.

Grade Reports An official grade report will be mailed to each registered student approximately three weeks after the quarter is completed. Grades will not be given over the telephone or at the Registrar's Office. A supplementary grade report will be issued when a missing grade is received. Please do not call the Registrar's Office for it. University regulations prohibit issuing grades by telephone. S, U, X, I, and L grades are not included in the Quality Point Average. S grades are included in "earned hours" toward the degree. Cumulative totals do not appear on reports for non-matriculated students.

Academic Probation Students whose scholarship in any given period is unsatisfactory may be dropped from the College or may be placed on probation.

Auditing Policy

Students are permitted to audit courses upon filing the usual registration forms and paying the regular tuition fees. There is no reduction in fees for auditing. An auditor may participate in class discussion, complete papers and projects and take tests and examinations for informal evaluation, if desired. However, regardless of the amount or quality of work completed, **no academic credit will be granted at any time for courses audited.**

Audit Procedure The student's decision to take a course on an audit basis must be communicated in writing to the Registrar prior to the fourth class meeting of the course. No exception to this procedure can be approved without authorization by the Academic Standing Committee of the College.

Disciplinary Action

The Committee on Regulations and Discipline has the authority to dismiss from the College or place on probation at any time or to strike from the list of candidates for the degree, any student deemed unworthy because of conduct or character.

Changes in Requirements

The continuing development of University College forces frequent revision of curricula. In every new bulletin some improvements are indicated. When no hardship is imposed on the student because of changes, and when the facilities of the school permit, the student is expected to meet the requirements of the latest bulletin. If the student finds it impossible to meet these requirements, the bulletin for the year in which he or she entered becomes the binding one.

Family Educational Rights and Privacy Act

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records wherever appropriate and to challenge specific parts of them when they feel it necessary to do so. Specific details of the law as it applies to Northeastern are printed in the *Student Handbook* and are distributed annually at registrations of University College and the graduate schools.

Tuition and Fees

Tuition and fees are refundable only as stated under "Refund of Tuition." Checks and drafts for all charges are to be drawn to the order of Northeastern University.

Tuition for Courses in Other Departments or Colleges of the University

University College students assigned to courses in other departments or colleges of the University are charged the tuition rates and other fees effective in the departments or colleges in which they are enrolled.

Initial Registration Fee

A ten dollar (\$10.00) registration fee, required of all new students, is due and payable upon registration. This fee is nonrefundable.

Tuition

Tuition for all credit courses is \$41.50 per quarter hour of credit. Charges for registration and tuition for special courses are at the rate specified for each course. Students are permitted to audit courses; there is no reduction in fees for auditing.

Non-credit courses are charged at quarter hour rates comparable to those of credit courses meeting on an equivalent contact hour schedule.

Students are not permitted to attend class sessions or take any examination or test until they have paid their tuition fees or have made satisfactory arrangements for payment.

Students will not be advanced in class standing or permitted to re-enroll in the University, nor will degrees be conferred until all financial obligations to the University have been met.

No certificate of honorable dismissal will be issued to any student who has not fully met all financial obligations to the University.

Tuition Budget Payment Plans Occasionally situations develop—usually beyond the control of the student—which make it difficult to meet the payments in the manner outlined above. Under such circumstances the student is advised to discuss the problem personally at the Bursar's Office, where one of the budget plans or a deferred payment agreement may be worked out. Such arrangements should be made before the end of the first week of the quarter or within one week of the date of registration if the student enters late. A charge of \$5.00 will be made. Failure to take immediate action will result in a late payment fee of \$25.00.



Tuition Underwritten by Employers An increasing number of companies are underwriting part or all of the cost of tuition of students in their employ. In cases where payment is to be made directly by the employer to the University, the student should furnish to the Bursar's Office a purchase order covering registration or a statement from an officer of the company certifying that the company is underwriting the tuition.

Veterans' Benefits Any veteran covered by Public Law 89-358 should report to Room 108 Hayden Hall to fill out the proper enrollment forms.

Late Payment Fee Bills for tuition and fees are payable in accordance with the due date shown. A late payment fee of \$25.00 may be charged to all students failing to comply unless special payment arrangements are approved by the Bursar's Office.

Refund of Tuition The general policy in all schools and colleges of the University with respect to refunds of tuition to students is as follows:

The University provides all instruction on an academic quarter basis for which students pay at the beginning of each quarter. Tuition refunds will be granted through the first four weeks of a quarter only when specific conditions are met. Questions regarding refunds should be discussed with the Bursar.

Tuition refunds will be granted only on the basis of the date appearing on the official withdrawal application when filed with the Registrar in Room 120 Hayden Hall. Non-attendance does not constitute official withdrawal.

Refunds will be granted in accordance with the following schedule:

Official withdrawal filed within	Percentage of tuition
1st week of quarter	100%
2nd week of quarter	75%
3rd week of quarter	50%
4th week of quarter	25%

Fees

Student Center Fee All students in University College on the Huntington Avenue campus are charged \$.75 each quarter for the services available in the Student Center.

Laboratory Fee All students enrolled in biology or health professions courses which include laboratory must purchase from the Bursar's Office a Laboratory Fee and Deposit Card for \$15.00 (\$5.00 for extra cards). For chemistry, the cards cost \$20.00 per quarter with the possibility of a \$5.00 refund at the end of the quarter, depending upon breakage. The fee for arts and crafts courses is \$5.00. Upon completion of the course or withdrawal during the quarter, the stu-

dent must check his or her status with the laboratory attendant. The Bursar's Office will then refund any unused balance shown on the Laboratory Fee and Deposit Card.

In certain Hotel and Restaurant Management courses there is a laboratory fee. For Food and Beverage Management the fee is \$15.00 and for Food Preparation the fee is \$20.00 per quarter.

Graduation Fee The University graduation fee, charged to those who are candidates for the baccalaureate or associate degree, is \$25.00 payable on or before May 1 of the year in which the student expects to graduate.

Missed Final Examination Fee Students absent from the regularly scheduled final examination at the end of a course may petition for a "Missed Final Examination." The fee for each examination requested by the student is \$5.00. The fee must be paid when the petition is filed in the University Registrar's Office.

Transcripts

Students may request transcripts of their grades at the Registrar's Office. There is a charge of \$1.00 per copy, payable in advance.



Financial Aid and Scholarships

General information pertaining to financial aid opportunities and specific scholarship applications for part-time students are available in the University College Academic and Student Services Office, Room 102 Churchill Hall.

The following scholarships and awards are available to students enrolled in University College.

Scholarships

Professor Joseph A. Mullen Scholarships The Massachusetts Chapter of the American Society for Training and Development has established a fund to provide annual scholarship awards to deserving part-time students upon the recommendation of the Dean of University College.

Martin Luther King Jr. Scholarships Established in 1969 in memory of the late Rev. Martin Luther King Jr. Awards are made as openings occur, to a limited number of adults from minority groups who would otherwise be unable to continue their education. Stipends can cover tuition expenses not to exceed six quarter hours in any academic quarter (excluding summer quarter).

Kappa Tau Phi Scholarships The Kappa Tau Phi Sorority Scholarship Fund annually makes available scholarship awards. They are granted to women students in the arts and sciences, business, and engineering programs, respectively, who rank highest at the end of the upper-middle year. In the event the student is eligible for an award of greater monetary value, the award will be made to the next highest-ranking woman student. To be eligible for this scholarship, the student must be enrolled in a program of at least two evenings per week and must be a candidate for the bachelor's degree. In determining the recipient, grades of all courses completed in prior years shall be considered.

Harry Olins Scholarship The Harry Olins Scholarship Fund was established as an expression of firm belief in University College students and "what they stand for." The fund, presented by Mrs. Harry Olins in recognition of her husband's long service on the business faculty, makes available an annual tuition award to students who in terms of scholastic achievement, character, and personal need best typify the spirit of Northeastern University.

To be eligible for this award, the student must be a business administration degree candidate and carry a full academic load during the school year.

William J. McGovern Memorial Scholarship The William J. McGovern Memorial Scholarship was established in 1978 by an anonymous donor to honor the memory of William J. McGovern. The donor wishes to assist others in realizing their potential through higher education. The income from this scholarship will benefit worthy undergraduate students actively pursuing studies in University College or Lincoln College. Recipients must be in a matriculated status, demonstrate financial need and academic achievement, and must exhibit a high level of professional promise.

Pilot Freight Carriers Scholarships Pilot Freight Carriers, Winston-Salem, North Carolina, awards \$500 annually to advanced transportation students who have achieved high academic standing and who have paid their tuition expenses without prior aid. The award may be shared by more than one student. Qualified candidates should apply during the spring quarter, in University College, 102 Churchill Hall. The final determination is made by the Dean of University College.

H. Patricia Taylor Scholarship Fund The H. Patricia Taylor Scholarship Fund was established in 1974 by H. Patricia Taylor, a graduate of University College, and her husband, Harry C. Taylor, a graduate of the School of Business. The scholarship expresses their appreciation for financial assistance made available to Mrs. Taylor while obtaining her degree, and is an attempt to provide similar funds to assist others in realizing their potential through higher education. The income from the scholarship fund will be awarded annually to a student enrolled in University or Lincoln College who demonstrates financial need and academic stability and who meets other conditions of eligibility.

University and Lincoln College Faculty Society Memorial Scholarship Awards The Faculty Society of University and Lincoln College, Northeastern University, offers two awards annually, primarily for excellence in studies, to bachelor degree candidates in University and Lincoln College who have carried, and are currently carrying, a minimum of 24 quarter hours annually. Applications, available during the winter quarter, must be returned before the spring quarter.

These awards shall be known as University and Lincoln College Faculty Society Memorial Scholarship Awards in commemoration of the Club's deceased members.

U.S. Navy Field Training Supervisors Association Memorial Scholarship

A scholarship fund has been established by the generosity of the United States Navy Field Training Supervisors Association, in commemoration of the Association's deceased members. The scholarship is awarded annually to a deserving student, selected by the Committee on Scholarships, who is a management major, working toward a Bachelor of Science degree in the evening program of University College.

Roberta Macycove Wasserman Memorial Scholarship

This scholarship was established in 1976 through the generosity of family members and friends of Roberta Macycove Wasserman who, at the time of her death in 1975, was pursuing arts and sciences studies within University College. The income from the Memorial Scholarship Fund is awarded annually to a deserving female student who is a homemaker with family responsibilities and who is pursuing part-time studies within University College. The recipient shall demonstrate financial need, soundness of character, and academic stability.

Sigma Epsilon Rho Honor Society Scholarship Award

The Sigma Epsilon Rho Honor Society Scholarship Award, established in 1974 by the membership of the Society, is awarded annually to an undergraduate student of University and/or Lincoln College at Northeastern University. Eligible students must have a cumulative Quality Point Average of 3.0 or better after completing 80 percent or more of their required studies.

Transportation Club of New England Scholarship

The Transportation Club of New England provides approximately eight scholarships annually for persons employed in transportation and industry traffic departments. The scholarships are applicable toward tuition, books, and incidental expenses involved in transportation management courses. The purpose of the plan is to afford a limited number of people an opportunity to expand and improve their education by systematized study in courses in the field of transportation and distribution management. The scholarships are administered cooperatively with the Scholarship Committee of the Transportation Club of New England. Applications may be secured from and filed with the Secretary, Transportation Club of New England, 150 Causeway Street, Boston, Mass., 02114. Each applicant must be sponsored by a member of the Transportation Club.

Financial Aid

The Office of Financial Aid, located in 254 Richards Hall, offers several types of assistance to part-time students. All awards are based on financial need. Aid

granted from programs sponsored by the federal government is dependent upon the amount of funding allocated to Northeastern University. The University does not award financial assistance in any form to students who are not citizens or permanent residents of the United States.

Basic Educational Opportunity Grants (BEOG)

The Basic Educational Opportunity Grant program is a federal aid program designed to provide financial assistance to those who need it to attend post-high school educational institutions. Basic Grants are intended to be the "floor" of a financial aid package and may be combined with other forms of aid in order to meet the full costs of education. BEOG is a grant and, unlike a loan, does not have to be repaid. Half-time students taking at least 6 credit hours each quarter may now apply. Awards range up to one-half the maximum allowable by law contingent upon the total cost of education. Applications are available in the Office of Financial Aid, 254 Richards Hall, or by writing to BEOG, Post Office Box 84, Washington, D.C., 20044.

National Direct Student Loan This program is available to students who are carrying at least one-half the normal academic workload, are accepted as degree candidates, i.e. have 18 credit hours and a matriculation certificate, and who show evidence of financial need.

Students may borrow as much as \$1,500 each academic year, up to the maximum of \$5,000 for their undergraduate education, or a total of \$10,000 through the completion of graduate studies. Repayment and interest on these loans do not begin until nine months after the student ceases to carry at least a half-time academic load at an institution of higher education. The repayment of principal may be extended over a ten-year period with the interest at the rate of 3% per annum. Repayment may be deferred up to a total of three years while a borrower is serving as a Peace Corps or VISTA volunteer.

Borrowers who elect to teach the disadvantaged or handicapped may qualify for cancellation of their entire obligation at the rate of 15% per year of teaching service. A borrower serving as a full-time member of the Armed Services of the United States is entitled to cancel 12½% per annum of the principal outstanding on any loans, for each year of such service, up to a maximum cancellation of 50%.

Guaranteed Student Loan Program

Under this program, students who are matriculated degree candidates, enrolled for at least one-half the normal academic work load, may borrow from a participating bank or other financial institution. Terms and conditions vary from state to state, but a student generally

may borrow up to \$2,000 a year (the law allows a maximum of \$2,500 per year) depending on financial need. The federal government pays the interest while the student is in school if the student is eligible for interest subsidy.

Applications for this loan are available from local banks or the Education Office of your state government. Additional information is available from the Financial Aid Office.

Law Enforcement Assistance Administration The Law Enforcement Assistance Administration, U.S. Department of Justice, has set up an Office of Academic Assistance under authority of the Omnibus Crime Control and Safe Streets Act of 1968, Public Law 90-351. Through the University, loans up to \$2,200 per year for tuition and grants up to \$250 per academic quarter for tuition and fees are available to law enforcement personnel in undergraduate or graduate programs leading to degrees or certificates in areas directly related to law enforcement.

The loans, limited to full-time students in or preparing for law enforcement or corrections careers, are cancelled at the rate of 25 percent for each year the recipient subsequently serves in law enforcement at the federal, state, or local level.

The grants are available to full-time or part-time students employed in a publicly-funded law enforcement agency, and involve a signed agreement to remain in the service of a law enforcement agency employing such applicant for two years following completion of the course for which aid was given.

Applications for loans or grants should be obtained from the Office of Financial Aid, Room 254 Richards Hall.



Student Activities

Student activities for part-time students are planned, organized, and operated by the student body with the assistance of the Director of University-Lincoln College Student Activities. The programs are designed to keep pace with the changing needs of adult students and to provide maximum opportunity for student participation. All part-time students in University College and Lincoln College are welcome to participate.

The program is flexible in nature and pioneering in spirit to meet the needs of adult students. The Office of University-Lincoln College Student Activities is particularly interested in developing new clubs which will benefit students professionally and educationally. If students wish to start clubs related to their professions, this office will help them plan and organize clubs on the local and national level. The program is dedicated to assisting the adult student in the development of his or her fullest potential. The University-Lincoln College Student Activities Office is located in 102 Churchill Hall.

Purpose

The purposes of part-time student activities are: to provide opportunities for the development and pursuit of cultural interests and professional objectives; to encourage the development of leadership activities and skills; to enable the student to identify more closely with the University; to include the family, as an important and vital motivating force, in the part-time student's educational career.

Sigma Epsilon Rho Honor Society

Sigma Epsilon Rho is the honor society of University College. Its purposes are: to promote acquaintance and good fellowship among those students who have attained highest scholastic standing in the College; to stimulate the student body to higher scholastic accomplishment through the bearing, influence, and work of these selected men and women; to develop methods of mutual improvement and advancement among members; to support high moral, professional, and scholastic ideals.

Only honor graduates or seniors with honor standing at the end of the junior year are eligible for admission to the society. Admission is by invitation after nomination by the society.

An outstanding book is awarded each year by Sigma Epsilon Rho Society to the highest-ranking stu-

dent at the conclusion of the junior year. Students will receive the award only in the event that they enroll for the subsequent year.

Lambda Alpha Epsilon

Lambda Alpha Epsilon is a national law enforcement fraternity founded in 1957. The Northeastern Chapter Kappa Phi Beta is open to part-time and day students enrolled in Law enforcement, security and correctional practices programs and to professional men in the fields of law enforcement and security. The fraternity is dedicated to the furtherance of professional standards in law enforcement.

Evening Student Association

The Evening Student Association was formed to provide a representative body to promote the welfare of the student body in non-academic areas and to foster extracurricular activities which will enrich University life. It affords participants opportunities to meet and develop close personal relationships with fellow students and the administrative staff.

The Evening Student Council provides students with opportunities to develop leadership skills and gives them a chance to discuss matters of professional interest with experts in their chosen field.

The Council is made up of interested students in University and Lincoln College, representatives of part-time interest groups, and those specially certified by the Council because of their demonstrated interest in the overall adult programs of the University.

The E.S.C., a member of the United States Association of Evening Students, meets evenings on a monthly basis. Students are welcome to visit, observe, and express opinions concerning part-time student life.

Use of Gymnasium Facilities

Part-time students may utilize the gymnasium facilities during the hours 4:30-9:30 p.m. Monday through Friday, and during all open hours on Saturday and Sunday. A valid Northeastern student identification card must be presented to gain access to the facilities.

Specific schedules for use of the pool, weight room, indoor track, gymnasium, gymnastics room, and wrestling room are available at the beginning of each quarter in the Intramural Sports Office, Room 114 Cabot.

Part-time students do not have guest privileges or racquetball sign-up privileges.

Alumni Association

More than 78,000 alumni are members of the all-University Alumni Association which has as its prime purposes the promotion of the welfare of Northeastern University, the establishment of a mutually beneficial relationship between the University and its alumni, and the perpetuation of fellowship among members of the Association.

The Alumni Relations office is located in Room 101, Eli Student Center. The official records and addresses of alumni are maintained in Room 260, United Realty Building.

Activities of the Association, including the Homecoming Day celebration and the annual presentation of Professional Promise Awards to outstanding seniors in Lincoln and University Colleges, are directed by the Vice President for Public Affairs. Alumni officers also attend meetings of the undergraduate classes to form a closer relationship between the Association and its future members.

The Alumni Relations Office assists the various class officers in planning class reunions. Each class normally holds a reunion every five years during the month of June. The Vice President for the Alumni Class Council is responsible for coordinating class activities and organizing class functions.

The Vice President for Alumni Clubs works in close association with officers of the more than 50 Regional Alumni Clubs which have been established from coast to coast. All alumni are eligible to become members of these organizations. The alumni clubs meet periodically, often in conjunction with visits from members of the faculty or with athletic events.

For Boston area alumni, monthly luncheon meetings are held in both the downtown and uptown sections of the city.

The Association also sponsors and assists the Alumnae Organization and the Varsity Club, both of which have their own officers and conduct various programs throughout the year. Through the Varsity Club, the Association presents trophies to the outstanding athlete of the year in each of the five major sports.

One of the most recent developments in alumni activities is the organization of seminars which are conducted by the Association in cooperation with the University's Center for Continuing Education. The seminars are designed particularly for alumni who have a special interest in current events and the field of adult education.

The Northeastern University Alumni Association is a member of the American Alumni Council, a professional organization composed of representatives of all major colleges and universities in the United States and Canada.

Alumni Relations

The Alumni Association is providing a uniquely valuable service to both the University and the community by sponsoring admissions conferences for parents of high school students who are interested in attending college. These meetings, held in cooperation with the Northeastern University Office of Admissions, have been extremely well attended. Local residents as well as alumni of the University have been invited to these conferences, which help to clarify many of the questions today's parents and young people have concerning application procedures of colleges and universities.

Programs of Study

University College conducts part-time educational programs at the undergraduate level during day and evening hours. The programs are designed to help meet the varying needs and interests of adult students who may enroll as (1) *regular* students following degree programs or as (2) *special* students taking single courses or special programs.

University College programs leading to the Bachelor of Science and Bachelor of Arts degrees help provide opportunities for cultural and professional development equivalent in quality and scope to those offered in the conventional four-year college enrolling full-time students. The bachelor's degree requires 174 quarter hours of credit.

Programs leading to the Associate in Science degree help provide students with a background in fundamental areas in business administration, arts and sciences, law enforcement, health professions, and therapeutic recreation services. The Associate degree requires 96 quarter hours of credit and is equivalent to the conventional two-year or junior college in scope and quality.

Degree curricula are offered in the following areas:

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Course descriptions are listed in numerical order by department beginning on page 123.



Business Administration

Paul D. Maxwell, Associate Dean
Director, Business Administration Programs
Telephone 437-2418

Aims

Business Administration programs of study are offered to help meet the needs of adult men and women wishing to acquire a college education on a part-time basis. The opportunity to achieve professional competence in a chosen field, while developing potential for further managerial growth, is one of the program's principal objectives. Degree programs are designed to create both a breadth of perspective and a degree of specialization. Breadth of perspective may be obtained through exposure to a well-balanced sequence of arts and sciences courses, which emphasize fundamental economic laws and the social and cultural foundations of our changing American society. Specialized knowledge for future managerial growth may be acquired through the study of basic business courses, in addition to a self-determined study of a major business area.

Requirements

Associate in Science Degree The Associate in Science degree is offered in the following fields of study: Business Administration, Electronic Data Processing, Hotel and Restaurant Management, Purchasing, Real Estate, and Transportation and Physical Distribution Management. To qualify for the associate degree 96 quarter hours must be successfully completed in one of the five associate programs. Detailed information on these programs, together with a recommended sequence for completing them, appears on the following pages.

Upper-level Courses In an effort to achieve a certain level of analytic and academic sophistication among students taking upper-level business administration courses (designated by an asterisk wherever they appear in the catalog), University College instituted a new procedure in the fall quarter of 1969 whereby all new students are required to successfully complete an appropriate associate degree program before becoming eligible to take upper-level business administration courses. Special students (students not pursuing a degree program) may take upper-level courses if they can demonstrate to a program adviser (always present during registration) or to one of the deans in University College that they have an adequate background to cope with upper-level course content.

In determining whether a student has "an adequate background," the program advisers and the deans will evaluate, but not be limited to, such factors as work experience, former college work, and independent study.

The Bachelor of Science Degree The Bachelor of Science degree in Business Administration is offered in the following fields of study: Accounting, Finance, Hotel and Restaurant Management, Industrial Management, Industrial Technology, Insurance, Management, Management Information Systems, Marketing, Personnel and Industrial Relations, Transportation and Physical Distribution Management, and in the Combined Program in Arts and Sciences and Management.

The "appropriate" program for all Bachelor degree students, except Hotel and Restaurant Management, Management Information Systems, and Transportation and Physical Distribution Management degree students, is the associate degree program in Business Administration.

The "appropriate" associate degree program for the Hotel and Restaurant Management degree is the associate degree program of the same title.

The "appropriate" program for the MIS degree student is the associate degree program in Electronic Data Processing (EDP); the associate degree program in Transportation and Physical Distribution Management is the associate degree program of the same title.

Students pursuing one of the other associate programs or students pursuing an "inappropriate" associate program may make special arrangements with the Dean of Administration and the Director of Business Programs for a bachelor's program.

A student with a 2.0 average or better in an associate degree program will be considered by University College as having "successfully completed" the program. It should be noted that students do not have to formally receive Associate degrees; successful completion of the associate degree program (or demonstration of an "adequate background" in the case of special students) is all that is necessary for entry into upper-level business administration courses.

English Requirements English requirements shall be completed by taking either English I, II, III or already having received credit for a minimum of 9 quarter

hours of English credits. Students should contact the Director of Academic and Student Services, 437-2400, to ensure their status regarding the fulfillment of this requirement.

Single Quarter Intensives Many courses are frequently offered as single quarter intensives during the regular school year. Please refer to the current Schedule of Courses and Registration Guide for details.

Business Administration**Associate in Science Degree****quarter hours****Basic Courses—Arts and Sciences**

10.527	10.528	10.529	Mathematics I, II, III	9
19.301	19.302	19.303	Psychology I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.301	39.302	39.303	Economic Principles & Problems I, II, III	9
39.311	39.312	39.313	Statistics I, II, III	9

Applied Courses

49.310	49.311	Electronic Data Processing I, II	6
49.320		COBOL for Non-Programmers	3
49.400	49.401	Human Relations I, II	6
49.420	49.421	Labor Relations I, II	6

Basic Courses—Business Administration

41.301	41.302	Accounting Principles I, II	6
43.301		Introduction to Marketing I	3
44.301		Introduction to Finance	3
45.301		Management & Organization I	3
45.400		Production Management and Manufacturing Systems I	3

Electives 12**Total Credits** 96**Recommended course sequence for the three-year program leading to the associate in science degree:**

	Quarter I	Quarter II	Quarter III
First Year	English I Accounting I Human Rel. I Mgmt. & Org. I	English II Accounting II Human Rel. II Elective	English III Elective Elective Intro. to Finance
Second Year	Economics I Math I EDP I Elective	Economics II Math II EDP II Elective	Economics III Math III COBOL Prod. Mgmt. I
Third Year	Psychology I Statistics I Intro. to Mktng. I	Psychology II Statistics II Labor Rels. I	Psychology III Statistics III Labor Rels. II

Electronic Data Processing**Associate in Science Degree****quarter hours****Basic Courses—Arts and Sciences**

10.527	10.528	10.529	Mathematics I, II, III	9
29.301	29.302		Effective Speaking I, II	6
39.301	39.302	39.303	Economic Principles & Problems I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.311	39.312	39.313	Statistics I, II, III	9

Applied Courses

10.532	10.533		Mathematics for Business I, II	6
45.306			Project Planning & Control	3
49.310	49.311		Electronic Data Processing I, II	6
49.321	49.322	49.323	COBOL Programming I, II, III	9

Major Concentration Courses

41.301	41.302		Accounting Principles I, II	6
45.301	45.302		Management and Organization I, II	6
49.360	49.361	49.362	Systems Analysis and Design I, II, III	9

Electives

9

Total Credits**96**

Additional departmental offerings appear on pages 170 through 172.

Recommended course sequence for the three-year program leading to the associate in science degree:

	Quarter I	Quarter II	Quarter III
First Year	English I Accounting I Mgmt. & Org. I EDP I	English II Accounting II Mgmt. & Org. II EDP II	English III Elective Elective Proj. Planning
Second Year	Economics I Math I Sys. Analysis I COBOL I	Economics II Math II Sys. Analysis II COBOL II	Economics III Math III Sys. Analysis III COBOL III
Third Year	Effective Spking. I Statistics I Math. for Bus. I	Effective Spking. II Statistics II Math. for Bus. II	Elective Statistics III Elective

Hotel and Restaurant Management**Associate in Science Degree****quarter hours****Basic Courses—Arts and Sciences**

10.527	10.528	10.529	Mathematics I, II, III	9
19.301	19.302	19.303	Psychology I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.301	39.302	39.303	Economics I, II, III	9
39.311	39.312	39.313	Statistics I, II, III	9

Applied Courses

49.310	49.311	Electronic Data Processing I, II	6
49.400	49.401	Human Relations I, II	6
49.420	49.421	Labor Relations I, II	6

Basic Courses—Business Administration

41.301	41.302	Accounting I, II	6
45.301		Management & Organization I	3

Major Concentration Courses

47.400	47.401	Introduction to Hotel & Restaurant Management I, II	6
47.403		Food & Beverage Management	3
47.404		Managerial Accounting for the Hospitality Industry	3
47.405		Management Systems for the Hospitality Industry	3

Electives			9
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Total Credits			96
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Recommended course sequence for the three-year program leading to the associate in science degree:

	Quarter I	Quarter II	Quarter III
First Year	English I Accounting I Mgmt. & Org. I Intro. to Mgmt. I	English II Accounting II EDP I Intro. to Mgmt. II	English III Managerial Acctg. EDP II Food & Bev. Mgmt.
Second Year	Economics I Math I Human Relations I Mgmt. Systems	Economics II Math II Human Relations II Elective	Economics III Math III Elective Elective
Third Year	Statistics I Labor Relations I Psychology I	Statistics II Labor Relations II Psychology II	Statistics III Elective Psychology III

Purchasing**Associate in Science Degree**

quarter hours

Basic Courses—Arts and Sciences

10.527	10.528	10.529	Mathematics I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.301	39.302	39.303	Economic Principles & Problems I, II, III	9
39.311	39.312	39.313	Statistics I, II, III	9

Applied Courses

49.310	49.311	Electronic Data Processing I, II	6
49.400	49.401	Human Relations I, II	6

Basic Courses—Business Administration

41.301	41.302	Accounting Principles I, II	6
43.301		Introduction to Marketing I	3
44.301		Introduction to Finance	3
45.301		Management & Organization I	3
45.400		Production Management & Manufacturing Systems I	3

Major Field of Study

45.410		Production Control & Inventory Management	3
45.414		Materials Management	3
45.451	45.452	Purchasing I, II	6
45.457		Art & Technique of Purchasing Negotiations	3
45.458		Materials Requirement Planning	3
45.459		Subcontract Management	3
49.385		Principles of Materials Inspection	3

Electives			6
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Total Credits			96
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Additional departmental offerings appear on page 166.

Recommended course sequence for the three-year program leading to the associate in science degree:

	Quarter I	Quarter II	Quarter III
First Year	English I Math I Accounting I Mgmt. & Org. I	English II Math II Accounting II Prod. Mgmt. I	English III Math III Intro. to Mktng. I Intro. to Finance
Second Year	Economics I Purchasing I Human Rel. I EDP I	Economics II Purchasing II Human Rel. II EDP II	Economics III Mat'l's Req. Plan Elective Matls. Mgmt.
Third Year	Statistics I Subcontract Mgmt. Prod. Control	Statistics II Purch. Negtns. Matls. Insp.	Statistics III Elective Elective

Real Estate**Associate in Science Degree****quarter hours****Basic Courses—Arts and Sciences**

10.527	10.528	10.529	Mathematics I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.301	39.302	39.303	Economic Principles & Problems I, II, III	9
39.311	39.312	39.313	Statistics I, II, III	9

Applied Courses

49.301	49.302	Law I, II	6
49.400	49.401	Human Relations I, II	6

Basic Courses—Business Administration

41.301	41.302	Accounting Principles I, II	6
44.301		Introduction to Finance	3
45.301		Management & Organization I	3

Major Concentration Courses

47.320	47.321		Real Estate Fundamentals I, II	6
47.323	47.324	47.325	Real Estate Appraisal I, II, III	9
47.328	47.329		Real Estate Financial Analysis I, II	6
			Departmental Offerings	9

Electives

6

Total Credits**96**

Additional departmental offerings appear on pages 166 through 167.

Recommended course sequence for the three-year program leading to the associate in science degree:

	Quarter I	Quarter II	Quarter III
First Year	English I Math I Accounting I R.E. Funds. I	English II Math II Accounting II R.E. Funds. II	English III Math III Mgmt. & Org. I R.E. Title Exam
Second Year	Economics I Human Rel. I R.E. Appr. I Law I	Economics II Human Rel. II R.E. Appr. II Law II	Economics III Intro. to Fin. R.E. Appr. III Elective
Third Year	Statistics I R.E. Anal. I Elective	Statistics II R.E. Anal. II Elective	Statistics III R.E. Development Elective

Transportation and Physical Distribution Management**Associate in Science Degree****quarter hours****Basic Courses—Arts and Sciences**

10.527	10.528	10.529	Mathematics I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.301	39.302	39.303	Economic Principles & Problems I, II, III	9
39.311	39.312	39.313	Statistics I, II, III	9

Applied Courses

49.400	49.401	Human Relations I, II	6
49.420	49.421	Labor Relations I, II	6

Basic Courses—Business Administration

41.301	41.302	Accounting Principles I, II	6
43.301		Introduction to Marketing I	3
44.301		Introduction to Finance	3
45.301	45.302	Management & Organization I, II	6

Major Concentration Courses

48.301		Elements of Transportation	3
48.302		Physical Distribution Management	3
48.305	48.306	Traffic Management I, II	6
48.307		Contemporary Issues in Transportation & Distribution	3
48.308	48.309	Transportation Regulation & Promotion I, II	6
48.316		Carrier Management	3

Electives 6**Total Credits** 96

Additional departmental offerings appear on pages 168 through 169.

Recommended course sequence for the three-year program leading to the associate in science degree:

	Quarter I	Quarter II	Quarter III
First Year	English I Math I Accounting I Mgmt. & Org. I	English II Math II Accounting II Mgmt. & Org. II	English III Math III Intro. to Mkting. I Elms. of Transportation
Second Year	Economics I Human Relations I Physical Dist. Mgmt. Reg. & Prom. I	Economics II Human Relations II Labor Rels. I Reg. & Prom. II	Economics III Intro. to Finance Labor Rels. II Elective
Third Year	Statistics I Traffic Mgmt. I Carrier Mgmt.	Statistics II Traffic Mgmt. II Elective	Statistics III Contemporary Issues Elective

Accounting				Bachelor of Science Degree		
				quarter hours		
Associate Degree in Business Administration						96
Core Courses—Arts and Sciences						
21.301	21.302	21.303	Sociology I, II, III		9	
29.301			Effective Speaking I		3	
Applied Courses						
49.301	49.302		Law I, II *		6	
Major Concentration Courses						
41.401	41.402	41.403	Intermediate Accounting I, II, III *		9	
41.405	41.406		Cost Accounting I, II *		6	
41.407			Advanced Accounting I *		3	
41.410	41.411		Seminar in Contemporary Problems I, II *		6	
Electives						36
Total Credits						174

Additional departmental offerings appear on pages 158 through 160.

*Upper level course—see page 43.

Finance				Bachelor of Science Degree
				quarter hours
Associate Degree in Business Administration				96
Core Courses—Arts and Sciences				
21.301	21.302	21.303	Sociology I, II, III	9
29.301	29.302		Effective Speaking I, II	6
30.311			Business Writing & Reports I	3
Applied Courses				
49.301	49.302		Law I, II	6
Major Concentration Courses				
44.310	44.311		Financial Management I, II *	6
44.312	44.313		Investments I, II *	6
			Departmental Offerings	12
Electives				30
Total Credits				174
Specialization track recommendations: Corporate Financial Management				
44.314	44.315		Credit Management I, II *	6
44.316	44.317		Profit Planning & Control I, II *	6
44.320			Advanced Financial Management *	3
44.323			Seminar in Finance *	3
44.328	44.329		International Finance I, II *	6
Specialization track recommendations: Investment Management				
44.318	44.319		Management of Financial Institutions I, II *	6
44.320			Advanced Financial Management *	3
44.322			Advanced Investment Management *	3
44.324			Seminar in Investments *	3
44.325	44.326		Personal Financial Management I, II *	6
Specialization track recommendations: Management of Financial Institutions				
44.318	44.319		Management of Financial Institutions I, II *	6
44.314	44.315		Credit Management I, II *	6
44.322			Advanced Investment Management *	3
44.324			Seminar in Investments *	3
44.325	44.326		Personal Financial Management I, II *	6

Departmental offerings appear on pages 161 through 163.

*Upper level course—see page 43.

Hotel and Restaurant Management**Bachelor of Science Degree****Associate Degree in Hotel and Restaurant Management****quarter hours****96****Core Courses—Arts and Sciences**

19.332	19.333		Industrial Psychology I, II	6
21.301	21.302	21.303	Sociology I, II, III	9
29.301			Effective Speaking I	3
30.311			Business Writing & Reports I	3

Applied Courses

49.301	49.302	Law I, II	6
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Basic Courses—Business Administration

43.301	Introduction to Marketing I	3
44.301	Introduction to Finance	3
45.303	Principles & Practices of Management	3

Major Concentration Courses—

Select 15 quarter hours:

47.406		Front Office Management	3
47.407		Hotel & Restaurant Law	3
47.408		Hospitality Marketing Management	3
47.409		Design & Layout	3
47.410	47.411	Food Preparation I, II	6
47.412		Food Service Engineering & Sanitation	3
47.413		Food Technology	3
47.414		Food Production Management	3
47.415	47.416	Seminar in Hotel & Restaurant Management I, II	6

Electives**27****Total Credits****174**

Industrial Management**Bachelor of Science Degree****quarter hours****Associate Degree in Business Administration****96****Core Courses—Arts and Sciences**

10.532	10.533	Math for Business I, II	6
16.311		History of Ancient World Sciences and Technologies	3
16.312		History of Modern World Sciences and Technologies	3
19.332	19.333	Industrial Psychology I, II	6
29.301	29.302	Effective Speaking I, II	6
30.311	30.312	Business Writing & Reports I, II	6

Applied Courses

45.315		Effecting Change	3
49.301	49.302	Law I, II	6

Major Concentration Courses—Students specializing in Quality Control Management

45.403		Manufacturing Processes *	3
45.404		Value Management *	3
45.411	45.412	Industrial Decision Making I, II *	6
45.413		Manufacturing Seminar *	3
49.382		Statistical Quality Control *	3
49.383		Management of Quality Control *	3
49.385		Material Inspection *	3

Major Concentration Courses—Students specializing in Operations Management

45.403		Manufacturing Processes *	3
45.404		Value Management *	3
45.405		Industrial Safety *	3
45.406		Methods Analysis, Time and Motion Study *	3
45.407		Operations Management *	3
45.411	45.412	Industrial Decision Making I, II *	6
45.413		Manufacturing Seminar *	3

Major Concentration Courses—Students specializing in Materials Management

45.404		Value Management *	3
45.410		Production Control & Inventory Management	3
45.411	45.412	Industrial Decision Making I, II *	6
45.413		Manufacturing Seminar *	3
45.414		Materials Management	3
45.451	45.452	Purchasing I, II	6

Major Concentration Courses—Students specializing in Manufacturing Administration

41.307		Accounting for Management Decisions *	3
45.306		Project Planning & Control *	3
45.403		Manufacturing Processes *	3
45.406		Methods Analysis, Time & Motion Study *	3
45.411	45.412	Industrial Decision Making I, II *	6
45.413		Manufacturing Seminar *	3
49.360		Systems Analysis & Design I	3

Electives	15
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Total Credits	174
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Additional departmental offerings appear on pages 165 through 166.

*Upper level course—see page 43.

Industrial Technology**Bachelor of Science Degree****Engineering or Science Technology Courses**

quarter hours

96

(Must have completed English I, II, III or its equivalent)

Core Courses—Arts and Sciences

19.301	19.302	19.303	Psychology I, II, III	9
21.301	21.302	21.303	Sociology I, II, III	9
39.301	39.302	39.303	Economic Principles & Problems I, II, III	9

Applied Courses

49.301	49.302	Law I, II *	6
49.310		Electronic Data Processing I	3
49.400	49.401	Human Relations I, II	6
49.420	49.421	Labor Relations I, II	6

Core Courses—Business Administration

41.301	41.302	Accounting Principles I, II	6
43.301		Introduction to Marketing I	3
45.301	45.302	Management & Organization I, II	6
45.403		Manufacturing Processes	3
49.382		Statistical Quality Control	3
49.383		Management of Quality Control	3

Total Credits**174**

*Upper level course—see page 43.

Insurance			Bachelor of Science Degree	
Associate Degree in Business Administration			quarter hours	
				96
Core Courses—Arts and Sciences				
21.301	21.302	21.303	Sociology I, II, III	9
29.301	29.302		Effective Speaking I, II	6
30.311			Business Writing & Reports I	3
Applied Courses				
49.301	49.302		Law I, II *	6
Major Concentration Courses				
44.417			Personal Insurance Planning	3
			Departmental Offerings	21
Electives				30
Total Credits				174

Additional departmental offerings appear on page 163.

*Upper level course—see page 43.

Management			Bachelor of Science Degree	
			quarter hours	
Associate Degree in Business Administration				96
Core Courses—Arts and Sciences				
19.332	19.333	Industrial Psychology I, II		6
29.301	29.302	Effective Speaking I, II		6
30.311	30.312	Business Writing & Reports I, II		6
39.331	39.332	39.333	Business Cycles I, II, III	9
Applied Courses				
45.306		Project Planning & Control		3
49.301	49.302	Law I, II *		6
Major Concentration Courses				
41.307		Accounting for Management Decisions I *		3
43.334		Marketing Management I *		3
44.318		Management of Financial Institutions I *		3
45.303		Principles & Practices of Management		3
45.310	45.311	Management Decisions and Policies I, II *		6
45.313	45.314	Management Seminar I, II *		6
Electives				18
Total Credits				174

Additional departmental offerings appear on pages 163 through 165.

*Upper level course—see page 43.

Management Information Systems**Bachelor of Science Degree**

				quarter hours
Associate Degree in Electronic Data Processing				96
Core Courses—Arts and Sciences				
21.301	21.302	21.303	Sociology I, II, III	9
30.311	30.312		Business Writing & Reports I, II	6
Applied Courses				
49.301	49.302		Law I, II *	6
49.380			Introduction to Operations Research *	3
49.381			Operations Research Applications *	3
49.400	49.401		Human Relations I, II	6
49.420	49.421		Labor Relations I, II	6
Major Concentration Courses				
44.301			Introduction to Finance	3
44.310			Financial Management I	3
49.363			Systems Analysis & Design IV *	3
49.364			Data Systems Administration	3
49.365			Data Processing Applications I	3
49.367	49.368		Senior Seminar I, II *	6
Electives				18
Total Credits				174

Additional departmental offerings appear on pages 170 through 172.

*Upper level courses—see page 43.

Marketing**Bachelor of Science Degree****Associate Degree in Business Administration****quarter hours****96****Core Courses—Arts and Sciences**

21.301	21.302	21.303	Sociology I, II, III	9
29.301	29.302		Effective Speaking I, II	6
30.311	30.312		Business Writing & Reports I, II	6

Applied Courses

49.301	49.302		Law I, II *	6
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Major Concentration Courses

43.302			Intro. to Marketing II	3
43.334	43.335		Marketing Management I, II *	6
43.313	43.314		Marketing Research I, II *	6
43.322	43.323		Sales Management I, II *	6

Electives**30****Total Credits****174**

Additional departmental offerings appear on pages 160 through 161.

*Upper level course—see page 43.

Personnel and Industrial Relations**Bachelor of Science Degree****Associate Degree in Business Administration****quarter hours**

96

Core Courses—Arts and Sciences

21.301	21.302	21.303	Sociology I, II, III	9
26.301	26.302	26.303	Introduction to Philosophy I, II, III	9
29.301	29.302		Effective Speaking I, II	6

Applied Courses

49.301	49.302		Law I, II *	6
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Major Concentration Courses

49.404	49.405	49.406	Personnel Management I, II, III *	9
49.423	49.424	49.425	Legal Standards for the Workplace I, II, III *	9
49.426	49.427		New Patterns of Collective Bargaining I, II *	6

Electives

24

Total Credits**174**

Additional departmental offerings appear on pages 172 through 174.

*Upper level course—see page 43.

Transportation and Physical Distribution Management				Bachelor of Science Degree
Associate Degree in Transportation and Physical Distribution Management				quarter hours
				96
Core Courses—Arts and Sciences				
19.301	19.302	19.303	Psychology I, II, III	9
or			or	or
21.301	21.302	21.303	Sociology I, II, III	9
29.301	29.302		Effective Speaking I, II	6
39.323	39.324	39.326	Government & Business I, II, III	9
Applied Courses				
49.301	49.302		Law I, II *	6
49.310	49.311		Electronic Data Processing I, II	6
49.320			COBOL for Non-Programmers	3
Electives				39
Total Credits				174

Additional departmental offerings appear on pages 168 through 169.

*Upper level course—see page 43.

Combined Program in Arts and Sciences and Management**Bachelor of Science Degree****quarter hours****Basic Courses—Arts and Sciences**

10.527	10.528	10.529	Mathematics I, II, III	9
19.301	19.302	19.303	Psychology I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.301	39.302	39.303	Economic Principles & Problems I, II, III	9

Core Courses—Arts and Sciences

21.301	21.302	21.303	Sociology I, II, III	9
22.301	22.302	22.303	Principles of Political Science I, II, III	9
23.301	23.302	23.303	History of Civilization I, II, III	9
23.304	23.305	23.306	American History I, II, III	9
26.301	26.302	26.303	Introduction to Philosophy I, II, III	9
39.311	39.312	39.313	Statistics I, II, III	9

Arts and Sciences Electives

Fine Arts: Art, Music, or Theatre Arts	9
Literature: English, American, or other in translation	9

Applied Courses

49.301	49.302	Law I, II *	6
49.310	49.311	Electronic Data Processing I, II	6
49.320		COBOL for Non-Programmers	3
49.400	49.401	Human Relations I, II	6
49.420	49.421	Labor Relations I, II	6

Core Courses—Business Administration

41.301	41.302	Accounting Principles I, II	6
43.301		Introduction to Marketing I	3
44.301		Introduction to Finance	3
44.310	44.311	Financial Management I, II *	6
45.301	45.302	Management & Organization I, II	6

Electives

15

Total Credits**174**

*Upper level course—see page 43.



Arts and Sciences

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Aims

In providing the means to a modern liberal education, University College has the main objective of stimulating and guiding the self-development of the student in three main areas: first, intellectual growth; second, the development of character and sense of values; and third, preparation for, or advancement in, a career.

Intellectual growth — the development of the ability to think independently and creatively—rests upon the foundation of a sound general education. Through the arts and sciences curricula, students are guided toward an appreciative understanding of the active discovery of ideas and methods in the areas of humanities, natural science, and social science. With this training, the student can more fully realize the basic values upon which civilization rests and can more fully participate in the intellectual, moral, and material achievement of that civilization.

Through its many programs, University College tries to provide experiences conducive to the development of strength of character and a sense of personal responsibility, including such personal qualities as self-reliance, integrity, perseverance, and the ability to work with others.

University College holds that there is no inconsistency between a truly liberal education and preparation for a vocation. As an adventure in intellectual discovery, a liberal education leads to the broadening and intensification of interests as the student becomes aware of his or her own mental strengths and weaknesses. This discovery is essential for making more intelligent and realistic appraisals of self and career. A career brings meaning and focus to the educational experience. Education presents both a challenge to accept responsibility and an opportunity to seek knowledge and skills.

Course Number Changes

In the fall of 1977, University College changed from a two-credit curriculum to a three-credit curriculum; consequently, course numbers have been changed.

During the changeover to new course numbers, the course numbers which were previously 00.500 have generally been changed to 00.300 and those which were 00.600 have generally been changed to 00.400. For example, former course 19.501 now becomes 19.301; former course 22.602 now becomes 22.402.

There are several major exceptions. In biology and chemistry courses, the change is from 00.500 to 00.400, thus former course 18.511 now becomes 18.411.

Methods

To enable each student to plan a college program in keeping with his or her own interests and aptitudes, a wide range of electives is offered. This does not mean that students are free to elect courses indiscriminately, for if they are to obtain a liberal education they must have training in several basic fields.

Therefore, the Curriculum Committee of University College has established basic minimum requirements in each of several fields. These distribution requirements are outlined with each of the program offerings.

Bachelor Degrees

Upon petitioning for matriculation, students must indicate their choice of degree program, Bachelor of Arts or Bachelor of Science.

Bachelor of Arts Major fields of study are offered in economics, English, art, political science, history, psychology, sociology-anthropology, and music. Students should choose their major field of study and their electives in consultation with a program adviser.

The distribution requirements, including specific required courses, are shown with each curriculum.

Each curriculum normally provides for not less than 174 quarter hours of work, including at least 40 quarter hours of advanced work in a major field, and a number of elective arts and sciences courses.

All candidates for the Bachelor of Arts degree must have satisfactorily completed in college one full year of a modern language beyond the elementary level and 9 quarter hours of English.

No student transferring from another college or university is eligible to receive a degree until at least 45-46

quarter hours of academic work have been completed at Northeastern University immediately preceding graduation.

Bachelor of Science Some departments have elected to offer a B.S. degree, the requirements for which are listed after the B.A. degree in the following pages (unless otherwise stated, the requirements are the same as for the B.A. degree).

Chemical-Biological Technology Programs

Recognizing the need for technicians and technologists in modern society, University College offers the following programs (formerly in Lincoln College):

Chemical-Biological Technology (A.S.)	page 82.
Chemical-Biological Technology (B.S.)	page 83.

The Associate in Science Degree

The program leading to the associate degree is offered for those desiring a general cultural background in arts and sciences and humanities, but who do not wish to pursue a major field of concentration for the baccalaureate degree.

Candidates for the Associate in Science degree in Arts and Sciences must complete a minimum of 96 quarter hours of credit. This is approximately one half of the requirements (174 quarter hours) for the Bachelor of Science degree.

To provide a balanced program which will achieve the established objectives, the faculty has set a minimum credit requirement in the several areas of study as listed under each major.

Distribution Requirements

For the purpose of satisfying the distribution requirements in all Arts and Sciences majors:

Math-Science includes only courses in mathematics (10. . . .), physics (11. . . .), Chemistry (12. . . .), earth science (16. . . .), biology (18. . . .), and psychology (lab. courses only) (19. . . .).

Humanities includes only courses in art (27. . . .), speech and theatre arts (29. . . .), English (except required) (30. . . .), journalism (38. . . .), modern languages (except required elementary or conversational) (31. . . . to 34. . . .), philosophy (26. . . .), and music (28. . . .).

Social Sciences includes only courses in economics (39. . . .), history (23. . . .), political science (22. . . .), psychology (except laboratory courses) (19. . . .), social welfare (25. . . .), and sociology-anthropology (20. . . . and 21. . . .).

English Requirement The 9 quarter hours of required English (30.305, 30.306, 30.307, English I, II,

III) must be taken prior to matriculation. These are required courses which cannot be used to satisfy distribution requirements in any arts and sciences course of study.

Honors Program

An upperclass honors program is provided in University College to enable superior students to develop their potential to the highest degree by making it possible for them to pursue studies in their major fields to greater depth than is possible in the regular courses.

The nature of the program is determined by the academic department concerned. Programs may involve any of the following elements: special research projects culminating in honor theses, seminars, reading projects, directed independent study, or creative work. Flexibility is the keynote, with every consideration given to the individual needs and requirements of the student. Honors advisers are chosen from the full-time faculty of the department concerned in consultation with the department consultant.

Students who have earned 96 quarter hours of credit toward their bachelor degree and who have a grade-point average of 3.0 or better are eligible to apply to the Director of Arts and Sciences in University College for admission to the program. Acceptance as an honors candidate rests with the academic department concerned.

Acceptance of Credits by the College of Arts and Sciences

The College of Arts and Sciences, one of the basic (day) colleges of Northeastern University, permits its students to enroll for credit in all courses in University College offered on a quarterly basis, when they are pertinent to the student's program and have been approved by the Dean of the College of Arts and Sciences. The credits for such courses may be applied to the total number of credits needed for graduation, to satisfy distribution requirements and/or to fulfill language and major deficiencies.

Credits from University College, as well as those from other accredited institutions, may not be applied to the quality point average of students in the College of Arts and Sciences except when such credits are from courses taken as substitutes for those College of Arts and Sciences courses failed by students. In such instances, students must receive a grade of C or better in the University College courses and then only 2.0 quality points are applied to the student's record for each course. Courses taken in University College which are not offered in the College of Arts and Sciences may be transferred with the full grade upon approval of the major department.

Advanced Standing Credit—Credit for Non-Collegiate Experience (NCE)

A matriculated Arts and Sciences student with a departmental major in University College is eligible to obtain up to 16 quarter hours of credit toward either bachelor's degree (excluding CLEP credit) for knowledge acquired in a non-traditional manner.

The student will petition his or her major adviser (with a copy to the Director of Academic and Student Services) for such credit, listing the Arts and Sciences course(s), as well as the reasons, for which credit should be received. Under especially unusual circumstances, as interpreted by the petitioned department, the student may also secure credit for subject matter which has no counterpart course in University College. The major adviser will contact the consultant of the appropriate Arts and Sciences department to arrange for an appraisal of the student's credentials. At the discretion of the department, this appraisal may or may not include a formal examination. Upon receipt of the consultant's positive or negative recommendation, the student may request the Director of Academic and Student Services to inform him or her in writing of the status of the petition.

In order to plan their last year and to expedite the evaluation of their petition for NCE credit, students planning to graduate during a particular year are urged to submit petitions prior to June 1 of the year preceding graduation. No petitions can be considered after February 1 for June graduation or after March 1 for September graduation.

In no case will this credit be considered as partial fulfillment of the residence requirement nor will a grade be assigned.

No credit will be assigned in this manner for courses which can be accredited through the CLEP testing program at the time of the petition.

Wherever possible, credit will be assigned for specific courses.

It is possible that this credit may be applicable toward a degree in University College only.

Field Work Courses

To provide the opportunity for students to apply their academic background to practical problems, several departments have introduced courses in their curriculum entitled "Field Work In. . . ."

A field work course shall have the following characteristics (as voted by the Curriculum Committee):

1. It shall be a one-quarter course worth six quarter hours of credit.
2. Only matriculated majors within the department offering the course may register.

3. The prerequisites shall be departmentally established.

4. Each student shall make his or her own arrangements for carrying on suitable field work at a departmentally acceptable organization involving departmentally acceptable field work experience(s). The department will participate in student placement only in an advisory capacity.

5. Each student shall spend a minimum of fifteen hours per week at the outside organization on a volunteer or paid basis.

6. Each student shall meet with the departmental field work adviser as frequently as the adviser feels necessary but, in any case, no fewer than three times per quarter (once to formulate the program of field work experience, once to discuss ongoing work, and once to transmit and discuss the final written report).

7. The student's grade shall be dependent upon both the quality of the experience as demonstrated in the final report and the discussions between the U.C. field work adviser and the outside supervisor.

8. Provided that one student registers, the course will not be cancelled.

9. The outside supervisor will be offered a transferrable voucher for a tuition-free course at Northeastern University.

Prior to registration, each student should consult with the major department.

All field work courses will be numbered as follows:— .499.

Economics**Bachelor of Arts Degree****quarter hours****Distribution Requirements**

See page 66 for courses included in these categories:

Math-Science	18
Humanities	24

Arts and Sciences Program Requirements

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required

39.311	39.312	39.313	Statistics I, II, III	9
39.317	39.318		Money and Banking I, II	6
39.319			Government Finance	3
39.327			Labor Economics	3

Major Concentration Electives from advanced-level courses: (39.---series) 27

Electives 51

Total Credits 174

Economics**Bachelor of Science Degree****quarter hours****Distribution Requirements**

See page 66 for courses included in the category below:

Social Sciences: (other than Economics courses)	18
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Arts and Sciences Program Requirements

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
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Major Concentration Courses—Required

39.311	39.312	39.313	Statistics I, II, III	9
39.317	39.318		Money and Banking I, II	6
39.319			Government Finance	3
39.327			Labor Economics	3

Major Concentration Electives from advanced-level courses: (39.---series) 48

Electives 78

Total Credits 174

English**Bachelor of Arts Degree****quarter hours****Distribution Requirements**

See page 66 for courses included in the categories listed below:

Math-Science	18
Social Sciences	24

Arts and Sciences Requirements

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses:**Preliminary Courses—all courses required**

30.341	30.342	30.343	English Literature I, II, III	9
30.344	30.345	30.346	American Literature I, II, III	9

Major Figures—three courses required

30.351	30.352	30.353	Chaucer I, II, III	9
30.354	30.355	30.356	Shakespeare I, II, III	9
30.361			Spenser	3
30.362	30.363		Milton I, II	6

English Literature—three courses required

30.357			The Seventeenth Century	3
30.358	30.359		The Eighteenth Century I, II	6
30.371	30.372		The Nineteenth Century I, II	6
30.373			The Twentieth Century	3
30.374			The Eighteenth-Century English Novel	3
30.375			The Nineteenth-Century English Novel	3
30.376			The Twentieth-Century English Novel	3

American Literature—three courses required

30.381			The American Short Story	3
30.382			The Nineteenth-Century American Novel	3
30.383			The Twentieth-Century American Novel	3
30.378	30.379		Afro-American Literature I, II,	6
30.339			Irish Writers in America	3
30.349			American Women Writers	3
30.384			Contemporary American Poetry	3

Literature in Translation—three courses required

30.331			The Ancient World	3
30.332			The Middle Ages	3
30.333			The Renaissance	3
30.334			Neoclassicism and Romanticism	3
30.335			Realism and Naturalism	3
30.336			The Modern World	3

English Electives (may include 30.391, 30.392, 30.393 Honors Programs I, II, III)	9
Open Electives	36
Total Credits	174

English	Bachelor of Science Degree
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Unless otherwise states, requirements are the same as for the B.A. degree except:

Modern Language	None
English Electives	27
Open Electives	44

Fine Arts**Bachelor of Arts Degree****quarter hours****Distribution Requirements**

See page 66 for courses included in these categories listed below:

Math-Science	18
Social Science	24

Arts and Sciences Program Requirements

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required

27.304	27.305	27.306	History of Art I, II, III	9
Select a minimum of 39 quarter hours from either Area I (art history major) or Area II (studio art major)				39

Electives	51
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Total Credits	174
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Fine Arts**Bachelor of Science Degree****quarter hours****Distribution Requirements**

See page 66 for courses included in these categories:

Math-Science	18
Social Science	24

Arts and Science Program Requirements

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
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Major Concentration Courses—Required

27.304	27.305	27.306	History of Art I, II, III	9
Select a minimum of 39 quarter hours from either Area I (art history major) or Area II (studio art major)				39

Electives	75
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Total Credits	174
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History			Bachelor of Arts Degree	
			quarter hours	
Distribution Requirements				
See page 66 for courses included in these categories:				
Math-Science			18	
Humanities			24	
Arts and Sciences Program Requirements				
30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12
Major Concentration Courses—Required				
23.301	23.302	23.303	History of Civilization I, II, III	9
23.304	23.305	23.306	American History I, II, III	9
23.300			The Historian's Craft	3
Courses from the following areas:				
I. Ancient, Medieval, and Early Modern Europe			6	
II. Modern and Contemporary Europe			6	
III. American History (in addition to 23.304, 23.305, 23.306 above)			6	
IV. Other regions			6	
Additional history electives may be chosen from the above four areas and may include history honors courses (if eligible)				
Electives			45	
Total Credits			174	

History**Bachelor of Science Degree****quarter hours****Distribution Requirements**

See page 66 for courses included in the category below:

Humanities 24

Arts and Sciences Program Requirements

30.305 30.306 30.307 English I, II, III (required prior to matriculation) 9

Major Concentration Courses—Required

23.301 23.302 23.303 History of Civilization I, II, III 9

23.304 23.305 23.306 American History I, II, III 9

23.300 The Historian's Craft 3

Courses from the following areas:

I. Ancient, Medieval, and Early Modern Europe 6

II. Modern and Contemporary Europe 6

III. American History (in addition to 23.304, 23.305, 23.306 above) 6

IV. Other Regions 6

Additional history electives may be chosen from the above four areas and may include

history honors courses (if eligible for honors courses) 9

Social Science Requirements

History majors are required to select two of the following course sequences for a total of 18 q.h.

19.301 19.302 19.303 Psychology I, II, III 9

20.301 20.302 20.303 Anthropology I, II, III 9

21.301 21.302 21.303 Principles of Political Science I, II, III 9

22.301 22.302 22.303 Sociology I, II, III 9

39.301 39.302 39.303 Economic Principles and Problems I, II, III 9

Other Required Courses

21.312 21.313 21.314 Social Research Methods I, II, III 12

49.310 49.311 Electronic Data Processing I, II 6

Electives

51

While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses in a variety of fields beyond the major.

Total Credits**174**

Arts and Sciences**Associate in Science Degree****quarter hours****Distribution Requirements**

See page 66 for courses included in the categories listed below:

Math-Science	18
Humanities	24
Social Sciences	24

30.305	30.306	30.307	English I, II, III	9
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Electives	21
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Total Credits	96
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Political Science**Bachelor of Arts Degree****quarter hours****Distribution Requirements**

See page 66 for courses included in these categories listed below:

Math-Science	18
Humanities	24

Arts and Sciences Program Requirements

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required**Prerequisites**

22.301	22.302	22.303	Principles of Political Science I, II, III	9
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Area I	American Government	9
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Area II	Comparative Government (22.329, Comparative Politics Intensive required, 3 q.h.)	7
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Area III	International Relations (22.335, International Relations required, 3 q.h.)	7
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Area IV	Theory and Methodology (22.336, Intro. to Political Theory required, 3 q.h.)	7
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Political Science Electives

Select from above areas and may include maximum number of q.h. permitted for honors courses.	18
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Open Electives

Must include not fewer than 6 q.h. from each of three different social science disciplines selected from economics, history, psychology and sociology-anthropology, other than political science.

27

Other Electives

15

Total Credits**174**

Political Science**Bachelor of Science Degree****quarter hours****Arts and Sciences Program Requirements**

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
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Major Concentration Courses—Required**Prerequisites**

22.301	22.302	22.303	Principles of Political Science I, II, III	9
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Area I	American Government			9
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Area II	Comparative Government (22.329, Comparative Politics Intensive required, 4 q.h.)			7
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Area III	International Relations (22.335, International Relations required, 4 q.h.)			7
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Area IV	Theory and Methodology (22.336, Intro. to Political Theory required, 4 q.h.)			7
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Political Science Electives

Select from above area and may include maximum number of q.h. permitted for honors courses.	18
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Additional Requirements

19.304	19.305	19.306	Statistics in Psychology I, II, III	9
or			or	or
39.311	39.312	39.313	Statistics I, II, III	9
49.310	49.311		Electronic Data Processing I, II	6
49.320			COBOL For Non-Programmers	3

Open Electives

Must include not fewer than 6 q.h. from each of three different Social Science disciplines selected from economics, history, psychology, and sociology-anthropology, other than political science	27
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Electives	63
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Total Credits	174
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Psychology**Bachelor of Arts Degree**

quarter hours

Distribution Requirements

See page 66 for courses included in these categories:

Math-Science	18
Humanities	24

Arts and Sciences Program Requirements

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required

It is recommended that Psychology majors substitute 19.308, 19.309, Fundamentals of Psychology I and II for 19.301, 19.302, 19.303; and 19.354, 19.355, Psychopathology I and II for 19.341, 19.342, 19.343. Students planning to continue their education beyond the B.A. or B.S. are encouraged to take Scientific Foundations of Psychology I & II (19.361 and 19.362).

19.301	19.302	19.303	Psychology I, II, III	9
or			or	or
19.308	19.309		Fundamentals of Psychology I, II	8
or			or	or
19.318	19.319		Foundations of Psychology I, II	8
19.304	19.305	19.306	Statistics in Psychology I, II, III	9
19.371			Senior Seminar	3

Three of the following pairs—Required

19.314	19.315	Personality I, II (Lab) (6)	
19.338	19.340	Learning I, II (Lab) (6)	
19.349	19.350	Sensation & Perception I, II (Lab) (6)	18
19.380	19.381	Physiological Psychology I, II (Lab) (6)	

Psychology Electives (19.---series)

21

Open Electives

39–40

While students may elect courses in their major field in excess of the minimum number required, they are encouraged to elect courses in a variety of fields beyond the major.

Total Credits

174

Psychology**Bachelor of Science Degree****quarter hours****Distribution Requirements**

See page 66 for courses included in this category:

Math-Science

32

Arts and Sciences Program Requirements

30.305 30.306 30.307 English I, II, III (required prior to matriculation)

9

Major Concentration Courses—Required

19.301	19.302	19.303	Psychology I, II, III	9
or			or	or
19.308	19.309		Fundamentals of Psychology I, II	8
or			or	or
19.318	19.319		Foundations of Psychology I, II	8
19.304	19.305	19.306	Statistics in Psychology I, II, III	9
19.371			Senior Seminar	3
19.314	19.315		Personality I, II (Lab)	6
19.338	19.340		Learning I, II (Lab)	6
19.349	19.350		Sensation & Perception I, II (Lab)	6
19.380	19.381		Physiological Psychology I, II (Lab)	6

Psychology Electives (19.---series)

15

Open Electives

73-74

It is recommended that Psychology majors substitute 19.308, 19.309, Fundamentals of Psychology I and II for 19.301, 19.302, 19.303; and 19.354, 19.355, Psychopathology I and II for 19.341, 19.342, 19.343. Students planning to continue their education beyond the B.A. or B.S. are encouraged to take Scientific Foundations of Psychology I & II (19.361 and 19.362).

Total Credits**174**

Sociology-Anthropology**Bachelor of Arts Degree****quarter hours**

In order to matriculate as a sociology-anthropology major, registration in either 21.312 (Social Research Methods I) or 21.317 (Social Theory I) is required.

Distribution Requirements

See page 66 for courses included in these categories:

Math-Science	18
Humanities	24

Arts and Sciences Program Requirements

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12

Major Concentration Courses—Required

Prerequisite

21.301	21.302	21.303	Sociology I, II, III or 21.307 Intensive Sociology (9) (may apply to major concentration electives unless waived by department)	
20.301	20.302	20.303	Anthropology I, II, III	9
21.312	21.313	21.314	Social Research Methods I, II, III	12
21.317	21.318	21.319	Social Theory I, II, III	9
or			or	or
21.417	21.418		Social Theory I, II (Intensive)	8

Sociology-Anthropology Electives: (20.--- or 21.---series) 30

Students may take any combination of Honors and Field Work totaling three courses

Open Electives 39–40

Total Credits 174

Sociology-Anthropology**Bachelor of Science Degree****quarter hours****Arts and Sciences Program Requirements**

30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
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Distribution Requirements

See page 66 for courses included in the categories below:

Social Science courses (other than Soc.-Anthro.)	18
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Major Concentration Courses—Required

21.301	21.302	21.303	Sociology I, II, III or 21.307 Intensive Sociology (9) may apply to major concentration electives unless waived by department	
20.301	20.302	20.303	Anthropology I, II, III	9
21.312	21.313	21.314	Social Research Methods I, II, III	12
21.317	21.318	21.319	Social Theory I, II, III	9
or			or	or
21.417	21.418		Social Theory I, II	8

Sociology-Anthropology Electives

At least 6 q.h. must be in anthropology.	48
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Open Electives

69-70

While students may elect courses in their major fields in excess of the minimum requirements, B.S. students especially are strongly encouraged to elect courses in math-science and the humanities to achieve adequate educational breadth.

Total Credits**174**

Music				Bachelor of Arts Degree
				quarter hours
Distribution Requirements				
See page 66 for courses included in these categories:				
Math-Science				18
Social Sciences				24
Arts and Sciences Program Requirements				
30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
Modern Language			Elementary or Conversational	12
			Intermediate	12
Major Concentration Courses—Required				
28.399	28.400	28.401	Music Theory I, II, III	9
28.402	28.403	28.404	Music History I, II, III	9
28.410			Music History IV	3
28.371			Piano Class I	3
28.328	28.329	28.330	Ear Training I, II, III	9
Major Concentration Electives (28.---series)				24
Open Electives				42
Total Credits				174

Music				Bachelor of Science Degree
				quarter hours
Distribution Requirements				
See page 66 for courses included in these categories:				
Math-Science				9
Social Sciences				24
Arts and Sciences Program Requirements				
30.305	30.306	30.307	English I, II, III (required prior to matriculation)	9
			Modern Language	12
Major Concentration Courses—Required				
28.399	28.400	28.401	Music Theory I, II, III	9
28.371	28.372	28.373	Piano Class I, II, III	9
28.328	28.329	28.330	Ear Training I, II, III	9
28.334	28.335	28.336	Pedagogy I, II, III	9
28.337	Conducting I			3
Major Concentration Electives				
From the 28.---series of which 6 q.h. must be in music history of any two periods				18
Humanities Electives (other than music courses)				15
Open Electives				48
Total Credits				174

Chemical-Biological Technology**Associate in Science Degree**

The program in Chemical-Biological Technology helps provide the chemistry and biology foundation required by medical and industrial laboratory assistants and technicians in clinically, chemically, or biologically oriented organizations, and for persons having paramedical responsibilities. Employment opportunities are in hospitals, health clinics, research foundations, chemical and drug industries, public health organizations, water and sanitation departments, and in the emerging fields of the oceanographic technologies.

Prerequisite: Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics I and II courses (10.330 and 10.331). The Mathematics Placement Test must be taken prior to registration.

Note: Associate degree graduates may transfer applicable credits toward the requirements in Lincoln College programs leading to the Associate in Engineering, Associate in Science, or Bachelor of Engineering Technology degrees, as well as University College programs.

quarter hours**First Year**

10.527	10.528	10.529	Mathematics I, II, III	9
or			or	or
10.307	10.308		College Algebra and Trigonometry I, II	8
11.304	11.305	11.306	General Physics I, II, III	6
12.444	12.445	12.446	General Chemistry I, II, III	9
30.305	30.306	30.307	English I, II, III	9

Second Year

10.316	10.317	10.318	Probability and Statistics I, II, III	6
or			or	or
10.320	10.321	10.322	Calculus I, II, III	8
			Social Science Elective I, II, III	9
18.411	18.412	18.413	Biology I, II, III	12

Third Year

12.431	12.432	12.433	Organic Chemistry I, II, III	12
or			or	or
12.421	12.422	12.423	Analytical Chemistry I, II, III	9
18.424	18.425	18.426	Human Anatomy and Physiology I, II, III	9
			Humanities Elective I, II, III	9

Fourth Year

18.421	18.422	18.423	Microbiology I, II, III	9
			Chemistry or Biology Electives (as needed to complete total credits)	

Total Credits**96-100**

Chemical-Biological Technology**Bachelor of Science Degree**

The Chemical-Biological Technology program is an interdisciplinary program integrating theoretical and laboratory course sequences from the fields of chemistry and biology which gives the opportunity for the student to prepare to assume responsibilities in laboratory careers which emphasize laboratory application and teaching careers in general science. Employment opportunities may be found in a wide variety of industrial, pharmaceutical, clinical, and hospital laboratories dealing with analytical, production, and research functions and in secondary school education

in the teaching of general science, chemistry, biology, and other related courses.

Prerequisite: Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics I and II courses (10.330 and 10.331). The Mathematics Placement Test must be taken prior to registration.

General Science Teacher Option—Students planning to apply to the Northeastern University Graduate School of Education must include courses in Adolescent Psychology and Principles of Teaching among the electives.

quarter hours**First Year**

10.527	10.528	10.529	Mathematics I, II, III	9
or			or	or
10.307	10.308		College Algebra & Trigonometry I, II	8
11.304	11.305	11.306	General Physics I, II, III	6
12.444	12.445	12.446	General Chemistry I, II, III	9
30.305	30.306	30.307	English I, II, III	9

Second Year

10.316	10.317	10.318	Probability and Statistics I, II, III	6
or			or	or
10.320	10.321	10.322	Calculus I, II, III	8
18.411	18.412	18.413	Biology I, II, III	12
23.301	23.302	23.303	History of Civilization I, II, III	9

Third Year

12.421	12.422	12.423	Analytical Chemistry I, II, III	9
18.424	18.425	18.426	Human Anatomy and Physiology I, II, III	9
19.301	19.302	19.303	Psychology I, II, III	9

Fourth Year

12.431	12.432	12.433	Organic Chemistry I, II, III	12
18.421	18.422	18.423	Microbiology I, II, III	9

Fifth Year

18.451	18.452	18.453	Histology-Organology I, II, III	6
39.301	39.302	39.303	Economics I, II, III	9
12.451	12.452		Instrumental Analysis I, II	6
12.453			Radiochemistry	3
16.331	16.332	16.333	Oceanology I, II, III	9

Sixth Year

18.461	18.462	18.463	Ecology I, II, III	9
12.441	12.442	12.443	Physical Chemistry I, II, III	9
or			or	or
12.415	12.416	12.417	Biochemistry I, II, III	9
21.301	21.302	21.303	Sociology I, II, III	9

Seventh Year

18.457	18.458	Genetics I, II	6
or		or	or
18.431	18.432	Cell Biology I, II	6
18.459		Genetics Lab	2
or		or	or
18.433		Cell Biology Lab	2
		Electives as needed to complete total credits	

Total Credits**175-178**

Law Enforcement

Timothy F. Moran, Associate Dean
Director, Law Enforcement Programs
Telephone 437-3324

Aims

Law Enforcement programs of study are offered to help meet the needs of present and potential practitioners in the fields of corrections, law enforcement, and security who wish to have the opportunity to acquire a liberal education as well as professional competence or to gain recognition for development and attainment while pursuing a career in that profession. Classes are tailored to suit the shifting tours of duty of many of its students, with the result that day and evening students meet on common ground. These students reflect broad differences in age, as well as in occupation, goals, race, and religion.

Methods

The distribution requirements, including certain required courses, are shown with each curriculum. Upon petition, students may be permitted under certain circumstances to substitute other courses which will more adequately serve their specific objectives.

To provide a balanced program which will achieve the established objectives, the faculty has set minimum requirements in the areas of study outlined on the following pages.

Bachelor of Science Degree Program Major fields of study are offered in Correctional Practices, Law Enforcement, and Security. Students should choose their major field of study in consultation with a program adviser.

Each curriculum provides for not less than 174 quarter hours of work, including at least 75 quarter hours of advanced work in a major field.

No student who has transferred from another institution is eligible to receive a degree until at least 45 to 46 quarter hours of academic work have been completed at University College of Northeastern University immediately preceding graduation.

Associate in Science Degree Program The program leading to the associate degree is offered for those who wish to obtain a general background in correctional practices, law enforcement, or security, and later may wish to pursue a major field of concentration for the baccalaureate degree.

Candidates for the Associate in Science degree must complete a minimum of 96 quarter hours of credit. This is approximately one half of the requirements for the Bachelor of Science degree, and includes at least 48 quarter hours of work in a major field.

Honors Program The Honors Program in the field of law enforcement is designed to provide qualified students with the opportunity to achieve a broader and deeper intellectual academic experience within their chosen fields: corrections, law enforcement, or security.

In general, the Honors Program consists of the following areas: independent study, directed reading seminar, independent research projects, and special seminars.

The particular academic structure of a student's Honors Program will be arranged in consultation with the Program Director and the Honors Faculty Committee.

The Honors Program is open to all matriculated Law Enforcement Program students in University College who have obtained an associate degree or equivalent and a minimum cumulative grade point average of 3.0. Students who are eligible for this program may apply for admission and approval to the Director of Law Enforcement Programs.

For course numbers, see page 188.

Credit for Non-Collegiate Experience (NCE)—Advanced Standing Credit

A matriculated University College student with a department major in Corrections, Law Enforcement, or Security, may obtain up to 18 quarter hours of credit (excluding CLEP), by petitioning to take a comprehensive examination in the specific subject area based upon the student's knowledge acquired in a non-traditional manner. Petitions for these examinations may be obtained in Room 102 Churchill Hall or Room 200 Churchill Hall.

In no case will this credit be considered as partial fulfillment of the residence requirement nor will a letter grade be assigned.

No credit will be assigned in this manner for courses which can be accredited through the CLEP Testing Program at the time of the petition. Credit will only be assigned to specific courses. It is possible that this credit may be applicable toward a degree in University College only.

Course Sequence

Upon completion of the required courses for matriculation, the student should elect courses from the Core and Major Concentration areas in fulfilling the

requirement for the Associate in Science and the Bachelor of Science degrees.

The completion of degree requirements may be accomplished at the student's own pace. A total of 32 courses is required for an associate in science degree, which can be completed over a period of three years, or nine academic quarters. A bachelor of science degree can be completed over a period of five years, or fifteen academic quarters. This schedule will average out to four courses per academic quarter.

Refer to page 26, Academic Policy/Maximum Academic Course Load.

Intensive Courses Many courses are frequently offered as single quarter intensives during the regular school year. Please refer to the listing of courses on page 188.

Intensive courses offer the opportunity for students to achieve their objectives in a shorter period of time.

Distribution Requirements For the purpose of satisfying the distribution requirements in all Law Enforcement programs, all students should discuss their academic program with a program adviser before attempting to undertake their program of study.

Courses 30.305, 30.306, 30.307, English I, II, III (9 quarter hours), must be taken by each student prior to matriculation. (Refer to page 23 regarding matriculation.) The remaining courses amounting to 30 quarter hours should be taken from the distribution of the Basic Required, Core Required, and Major Concentration Courses as listed on the opposite page.

Law Enforcement				quarter hours
30.305	30.306	30.307	English I, II, III	9
19.301	19.302	19.303	Psychology I, II, III	9
23.304	23.305	23.306	American History I, II, III	9
94.304	94.305		Criminal Investigation and Case Preparation I, II	6
94.325	94.326		Intro. to Criminalistics I, II	6
94.387	94.388		Administration of Justice, I, II	6
94.391	94.392		Criminal Law I, II	6
Correctional Practices				
30.305	30.306	30.307	English I, II, III	9
21.301	21.302	21.303	Sociology I, II, III	9
23.304	23.305	23.306	American History I, II, III	9
94.322	94.323		Correctional Administration I, II	6
94.327			The American Correctional System	3
94.338	94.339		Criminology I, II	6
94.387	94.388		Administration of Justice I, II	6
94.391	94.392		Criminal Law I, II	6
Security				
30.305	30.306	30.307	English I, II, III	9
21.301	21.302	21.303	Sociology I, II, III	9
22.314			American Constitutional Law	3
45.301	45.302		Management and Organization I, II	6
94.304	94.305		Crim. Invest. and Case Prep. I, II	6
94.387	94.388		Administration of Justice I, II	6
94.391	94.392		Criminal Law I, II	6
94.403	94.404		Security Administration I, II	6

Correctional Practices**Bachelor of Science Degree****quarter hours****Basic Courses—required**

19.301	19.302	19.303	Psychology I, II, III	9
21.301	21.302	21.303	Sociology I, II, III	9
30.305	30.306	30.307	English I, II, III	9
94.361	94.362		Law Enforcement Mathematics I, II	6
or			or	or
41.301	41.302		Accounting Principles I, II	6

Core Courses—required

21.334			Social Control	3
21.347			Social Problems	3
23.304	23.305	23.306	American History I, II, III	9
49.400	49.401		Human Relations in Organizations I, II	6

Core Electives

Select 33 quarter hours from the following:

19.324	19.325		Social Psychology I, II	6
19.341	19.342	19.343	Abnormal Psychology I, II, III	9
20.301	20.302	20.303	Anthropology I, II, III	9
21.353	21.354		Intergroup Relations I, II	6
21.356			Sociology of Inequality	3
21.357			Urban Sociology	3
22.301	22.302	22.303	Principles of Political Science I, II, III	9
22.314			American Constitutional Law	3
22.315			Civil Rights	3
22.316	22.317		Public Administration I, II	6
23.301	23.302	23.303	History of Civilization I, II, III	9
39.301	39.302	39.303	Economic Principles and Problems I, II, III	9

Major Concentration Courses—required

94.301			Human Rights in Corrections	3
94.303			Correctional Counseling	3
94.311	94.312		Advanced Correctional Practices I, II	6
94.327			The American Correctional System	3
94.330	94.331		Treatment of Offenders I, II	6
94.332	94.333		Correctional Administration I, II	6
94.338	94.339		Criminology I, II	6
94.341	94.342		Probation and Parole Practices I, II	6
94.387	94.388		Administration of Justice I, II	6
94.391	94.392		Criminal Law I, II	6

Elective Major Concentration Courses

A total of 36 quarter hours from the following courses. Not more than 18 quarter hours of seminar courses may be elected to satisfy this requirement.

94.302			Basic Statistics in L.E.	3
94.316			The Law and Institutional Treatment	3
94.317			Comparative Correctional Systems	3

94.318	94.319	Law Enforcement Ident. and Records I, II	6
94.328	94.329	Social Deviance I, II	6
94.340		Delinquency Prevention	3
94.345	94.346	Juvenile Corrections I, II	6
94.357		Seminar in Correctional Practices	3
94.358		National Law Enforcement Seminar	3
94.359		Hospital Security	3
94.364		Seminar in L.E.—(Youth Crime Control)	3
94.365		Seminar in L.E.—(Victimology)	3
94.366		Seminar in L.E.—(International Crime Control)	3
94.367		Seminar in L.E.—(Grantsmanship)	3
94.368		Seminar in L.E.—(Operational Intelligence)	3
94.370		Seminar in L.E.—(Collective Bargaining)	3
94.371	94.372	Man, Law, and Society I, II	6
94.375		Seminar in L.E.—(Organized Crime)	3
94.376		Seminar in L.E.—(Minorities and the Urban Crisis)	3
94.377		Seminar in L.E.—(Criminal Behavior)	3
94.380		Seminar in L.E.—(Intervention Strategies)	3
94.383		Seminar in L.E.—(Drugs)	3
94.384		Seminar in L.E.—(Executive Development)	3
94.385		Seminar in L.E.—(Mental Health and the Police)	3
94.386		Seminar in L.E.—(Data Processing)	3
94.389	94.390	Civil Law in Criminal Justice I, II	6
94.393	94.394	Evidence and Court Procedure I, II	6
94.395	94.396	Fire Investigation and Arson I, II	6
94.397		Law Enforcement Fiscal Management	3
94.398		Massachusetts Criminal Law	3
94.399		Alcohol Problems in Law Enforcement	3

Total Credits**174**

Additional departmental offerings on selections of intensive courses appear on page 188.

Correctional Practices**Associate in Science Degree****quarter hours****Basic Courses—required**

21.301	21.302	21.303	Sociology I, II, III	9
30.305	30.306	30.307	English I, II, III	9

Core Courses—required

23.304	23.305	23.306	American History I, II, III	9
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Core Electives

A total of 21 quarter hours from the following courses:

19.301	19.302	19.303	Psychology I, II, III	9
19.324	19.325		Social Psychology I, II	6
19.341	19.342	19.343	Abnormal Psychology I, II, III	9
21.334			Social Control	3
21.347			Social Problems	3
21.357			Urban Sociology	3
21.353	21.354		Intergroup Relations I, II	6
22.314			American Constitutional Law	3
22.315			Civil Rights	3
22.316	22.317		Public Administration I, II	6
23.301	23.302	23.303	History of Civilization I, II, III	9
49.400	49.401		Human Relations in Organization I, II	6

Major Concentration Courses—required

94.327			The American Correctional System	3
94.332	94.333		Correctional Administration I, II	6
94.338	94.339		Criminology I, II	6
94.387	94.388		Administration of Justice I, II	6
94.391	94.392		Criminal Law I, II	6

Elective Major Concentration Courses

A total of 21 quarter hours of credit from the following courses. Not more than 9 quarter hours of seminar courses may be elected to satisfy this requirement.

94.301			Human Rights in Corrections	3
94.303			Correctional Counseling	3
94.311	94.312		Advanced Correctional Practices I, II	6
94.316			The Law and Institutional Treatment	3
94.320			Basic Statistics in Law Enforcement	3
94.322			Research Methods in Criminal Justice	3
94.328	94.329		Social Deviance I, II	6
94.330	94.331		Treatment of Offenders I, II	6
94.340			Delinquency Prevention	3
94.341	94.342		Probation and Parole Practices I, II	6
94.345	94.346		Juvenile Corrections I, II	6
94.357			Seminar in Correctional Practices	3
94.358			The National Law Enforcement Seminar	3
94.365			Seminar in Law Enforcement—(Victimology)	3
94.371	94.372		Man, Law, and Society I, II	6

94.377		Seminar in L.E.—(Criminal Behavior)	3
94.383		Seminar in L.E.—(Drugs)	3
94.386		Seminar in L.E.—(Data Processing)	3
94.393	94.394	Evidence & Court Procedure I, II	6
94.399		Alcohol Problems in L.E.	3

Total Credits			96
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Additional departmental offerings on selections of intensive courses appear on page 188.

Law Enforcement**Bachelor of Science Degree****quarter hours****Basic Courses—required**

19.301	19.302	19.303	Psychology I, II, III	9
21.301	21.302	21.303	Sociology I, II, III	9
30.305	30.306	30.307	English I, II, III	9
94.361	94.362		Law Enforcement Mathematics I, II	6
or			or	or
41.301	41.302		Accounting Principles I, II	6

Core Courses—required

23.304	23.305	23.306	American History I, II, III	9
39.301	39.302	39.303	Economic Principles and Problems I, II, III	9

Elective Core Courses

A total of 33 quarter hours from the following courses:

19.324	19.325		Social Psychology I, II	6
19.341	19.342	19.343	Abnormal Psychology I, II, III	9
21.334			Social Control	3
21.347			Social Problems	3
22.301	22.302	22.303	Prin. of Political Science I, II, III	9
22.314			American Constitutional Law	3
22.315			Civil Rights	3
22.316	22.317		Public Administration I, II	6
22.328			Procedural Due Process	3
23.301	23.302	23.303	History of Civilization I, II, III	9
29.307			Business and Professional Speaking	3
26.331	26.332	26.333	Ethics I, II, III	9
26.334			Logic	3
39.342			Economics of Crime	3
49.400	49.401		Human Relations in Organization I, II	6

Major Concentration Courses—required

94.304	94.305		Criminal Invest. and Case Prep. I, II	6
94.308	94.309		Interviews and Interrogations I, II	6
94.325	94.326		Intro. to Criminalistics I, II	6
94.338	94.339		Criminology I, II	6
94.343	94.344		L.E. Management and Planning I, II	6
94.371	94.372		Man, Law and Society I, II	6
94.387	94.388		Administration of Justice I, II	6
94.391	94.392		Criminal Law I, II	6

Elective Major Concentration Courses

A total of 42 quarter hours from the following courses. Not more than 18 quarter hours of seminar courses may be elected to satisfy this requirement.

94.302		Basic Statistics in Law Enforcement	3
94.306		Comparative Police Systems	3
94.314	94.315	Traffic Safety and Control I, II	6
94.318	94.319	L.E. Identification and Records I, II	6
94.320		Police Public Relations	3

94.321		Police Community Relations	3
94.322		Research Methods in Criminal Justice	3
94.323	94.324	The Patrol Function I, II	6
94.328	94.329	Social Deviance I, II	6
94.335		Investigative Report Writing	3
94.336		Police Supervision	3
94.337		Police Work with Juveniles	3
94.340		Delinquency Prevention	3
94.358		National Law Enforcement Seminar	3
94.364		Seminar in L.E.—(Youth Crime Control)	3
94.365		Seminar in L.E.—(Victimology)	3
94.366		Seminar in L.E.—(International Crime Control)	3
94.367		Seminar in L.E.—(Grantsmanship)	3
94.368		Seminar in L.E.—(Operational Intelligence)	3
94.370		Seminar in L.E.—(Collective Bargaining)	3
94.374		Seminar in L.E.—(Interviewing Practicum)	3
94.375		Seminar in L.E.—(Organized Crime)	3
94.376		Seminar in L.E.—(Minorities and the Urban Crisis)	3
94.377		Seminar in L.E.—(Criminal Behavior)	3
94.378		Seminar in L.E.—(Prosecutive Development)	3
94.379		Seminar in L.E.—(Forensic Laboratory)	3
94.380		Seminar in L.E.—(Intervention Strategies)	3
94.381	94.382	Civil Liberties and the Police I, II	6
94.383		Seminar in L.E.—(Drugs)	3
94.384		Seminar in L.E.—(Executive Development)	3
94.385		Seminar in L.E.—(Mental Health and the Police)	3
94.386		Seminar in L.E.—(Data Processing)	3
94.389	94.390	Civil Law in Criminal Justice I, II	6
94.393	94.394	Evidence and Court Procedure I, II	6
94.395	94.396	Fire Investigation and Arson I, II	6
94.397		Law Enforcement Fiscal Management	3
94.398		Massachusetts Criminal Law	3
94.399		Alcohol Problems in L.E.	3

Total Credits**174**

Additional departmental offerings on selections of intensive courses appear on page 188.

Law Enforcement**Associate in Science Degree****quarter hours****Basic Courses—required**

19.301	19.302	19.303	Psychology I, II, III	9
30.305	30.306	30.307	English I, II, III	9

Core Courses—required

23.304	23.305	23.306	American History I, II, III	9
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Elective Core Courses

A total of 21 quarter hours from the following courses:

19.324	19.325		Social Psychology I, II	6
19.341	19.342	19.343	Abnormal Psychology I, II, III	9
21.301	21.302	21.303	Sociology I, II, III	9
21.334			Social Control	3
22.301	22.302	22.303	Principles of Political Science I, II, III	9
22.314			American Constitutional Law	3
22.315			Civil Rights	3
22.316	22.317		Public Administration I, II	6
23.301	23.302	23.303	History of Civilization I, II, III	9
26.331	26.332	26.333	Ethics I, II, III	9
26.334			Logic	3
29.307			Business and Professional Speaking	3

Major Concentration Courses Required

94.304	94.305		Criminal Investigation and Case Prep. I, II	6
94.325	94.326		Introduction to Criminalistics I, II	6
94.387	94.388		Administration of Justice I, II	6
94.391	94.392		Criminal Law I, II	6

Elective Major Concentration Courses

A total of 24 quarter hours from the following courses. Not more than 6 quarter hours of seminar courses may be elected to satisfy this requirement.

94.302			Basic Statistics in Law Enforcement	3
94.308	94.309		Interviews and Interrogations I, II	6
94.314	94.315		Traffic Safety and Control I, II	6
94.320			Police Public Relations	3
94.321			Police Community Relations	3
94.322			Research Methods in Criminal Justice	3
94.323	94.324		The Patrol Function I, II	6
94.328	94.329		Social Deviance I, II	6
94.335			Investigative Report Writing	3
94.336			Police Supervision	3
94.337			Police Work with Juveniles	3
94.338	94.339		Criminology I, II	6
94.340			Delinquency Prevention	3
94.358			National Law Enforcement Seminar	3
94.365			Seminar in L.E.—(Victimology)	3
94.371	94.372		Man, Law, and Society I, II	6
94.377			Seminar in L.E.—(Criminal Behavior)	3
94.383			Seminar in L.E.—(Drugs)	3
94.386			Seminar in L.E.—(Data Processing)	3

94.389	94.390	Civil Law in Criminal Justice I, II	6
94.393	94.394	Evidence and Court Procedure I, II	6
94.395	94.396	Fire Investigation and Arson I, II	6
94.398		Massachusetts Criminal Law	3
94.399		Alcohol Problems in Law Enforcement	3

Total Credits			96
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Additional departmental offerings on selections of intensive courses appear on page 188.

Security**Bachelor of Science Degree****quarter hours****Basic Courses—Required**

19.301	19.302	19.303	Psychology I, II, III	9
21.301	21.302	21.303	Sociology I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.301	39.302	39.303	Economic Principles and Problems I, II, III	9

Core Courses—Required

22.314			American Constitutional Law	3
41.301	41.302		Accounting Principles I, II	6
or			or	or
94.361	94.362		Law Enforcement Mathematics I, II	6
45.301	45.302		Management and Organization I, II	6

Elective Core Courses

A total of 36 quarter hours from the following courses:

19.332	19.333	19.334	Industrial Psychology I, II, III	9
22.301	22.302	22.303	Principles of Political Science I, II, III	9
22.315			Civil Rights	3
22.316	22.317		Public Administration I, II	6
23.301	23.302	23.303	History of Civilization I, II, III	9
23.304	23.305	23.306	American History I, II, III	9
26.331	26.332	26.333	Ethics I, II, III	9
26.334			Logic	3
29.307			Business and Professional Speaking	3
44.301			Introduction to Finance	3
45.405			Industrial Safety	3
49.310	49.311		Electronic Data Processing I, II	6
49.337			Privacy and Security (Computer Security)	3
49.420	49.421		Labor Management Relations I, II	6

Major Concentration Courses—Required

94.304	94.305		Criminal Investigation and Case Prep. I, II	6
94.307			Intro. to Industrial Security	3
94.308	94.309		Interviews and Interrogations I, II	6
94.352	94.353		Physical Security I, II	6
94.387	94.388		Administration of Justice I, II	6
94.391	94.392		Criminal Law I, II	6
94.393	94.394		Evidence and Court Procedure I, II	6
94.403	94.404		Security Administration I, II	6
94.406			Legal Aspects of Security Operations	3

Elective Major Concentration Courses

A total of 39 quarter hours from the following courses. Not more than 18 quarter hours of seminar courses may be elected to satisfy this requirement.

94.318	94.319		Law Enforcement Ident. and Records I, II	6
94.322			Research Methods in Criminal Justice	3
94.323	94.324		The Patrol Function I, II	6
94.325	94.326		Introduction to Criminalistics I, II	6

94.328	94.329	Social Deviance I, II	6
94.335		Investigative Report Writing	3
94.338	94.339	Criminology I, II	6
94.340		Delinquency Prevention	3
94.343	94.344	Law Enforcement Mgmt. and Planning I, II	6
94.350		Document Control	3
94.351		Industrial Fire Prevention	3
94.354		Retail Security	3
94.355		Bank Security Measures	3
94.358		National Law Enforcement Seminar	3
94.359		Hospital Security	3
94.360		Seminar in Security—(Current Problems)	3
94.365		Seminar in L.E.—(Victimology)	3
94.368		Seminar in L.E.—(Operational Intelligence)	3
94.370		Seminar in L.E.—(Collective Bargaining)	3
94.371	94.372	Man, Law, and Society I, II	6
94.375		Seminar in L.E.—(Organized Crime)	3
94.377		Seminar in L.E.—(Criminal Behavior)	3
94.389	94.390	Civil Law in Criminal Justice I, II	6
94.395	94.396	Fire Investigation and Arson I, II	6
94.407		Introduction to Government Security	3

Total Credits**174**

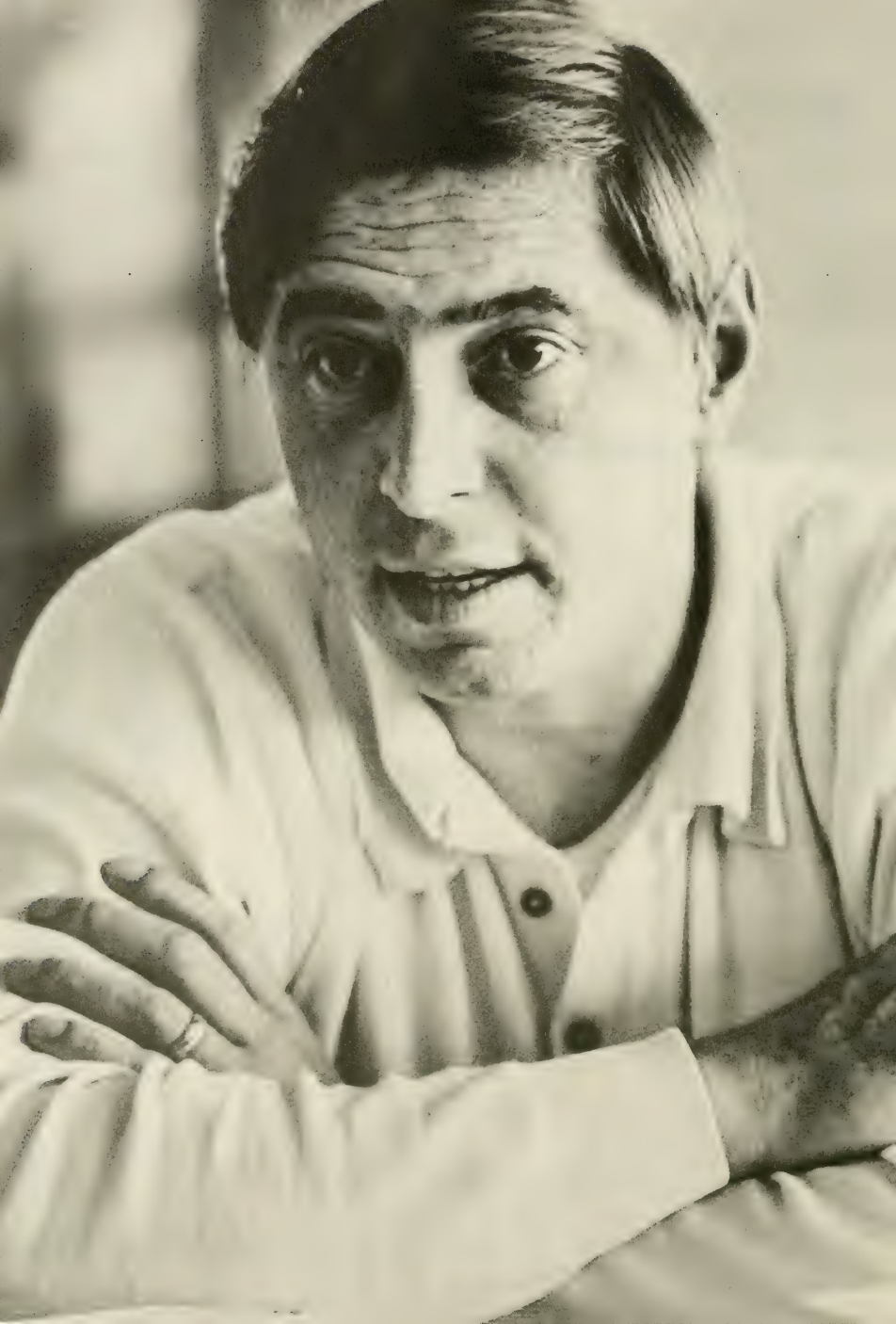
Additional departmental offerings on selections of intensive courses appear on page 188.

Security			Associate In Science Degree	quarter hours
Basic Courses—Required				
21.301	21.302	21.303	Sociology I, II, III	9
30.305	30.306	30.307	English I, II, III	9
Core Courses—Required				
22.314			American Constitutional Law	3
45.301	45.302		Management and Organization I, II	6
Elective Core Courses				
A total of 21 quarter hours from the following courses:				
19.301	19.302	19.303	Psychology I, II, III	9
19.332	19.333	19.334	Industrial Psychology I, II, III	9
22.315			Civil Rights	3
22.316	22.317		Public Administration I, II	6
23.301	23.302	23.303	History of Civilization I, II, III	9
23.304	23.305	23.306	American History I, II, III	9
26.331	26.332	26.333	Ethics I, II, III	9
26.334			Logic	3
29.307			Business and Professional Speaking	3
41.301	41.302		Accounting Principles I, II	6
44.301			Introduction to Finance	3
45.405			Industrial Safety	3
49.310	49.311		Electronic Data Processing I, II	6
49.420	49.421		Labor Management Relations I, II	6
Major Concentration Courses—Required				
94.304	94.305		Criminal Investigation and Case Prep. I, II	6
94.307			Intro. to Industrial Security	3
94.387	94.388		Administration of Justice I, II	6
94.391	94.392		Criminal Law I, II	6
94.403	94.404		Security Administration I, II	6
94.406			Legal Aspects of Security	3
Elective Major Concentration Courses				
A total of 24 quarter hours of credit from the following courses. Not more than 9 quarter hours of seminar courses may be elected to satisfy this requirement.				
94.307			Intro. to Industrial Security	3
94.308	94.309		Interviews and Interrogations I, II	6
94.323	94.324		The Patrol Function I, II	6
94.325	94.326		Introduction to Criminalistics I, II	6
94.335			Investigative Report Writing	3
94.338	94.339		Criminology I, II	6
94.340			Delinquency Prevention	3
94.343	94.344		Law Enforcement Management and Planning I, II	6
94.350			Document Control	3
94.351			Industrial Fire Prevention	3
94.352	94.353		Physical Security I, II	6
94.354			Retail Security	3

94.355		Bank Security Measures	3
94.358		National Law Enforcement Seminar	3
94.360		Seminar in Security (Current Problems)	3
94.365		Seminar in L.E.—(Victimology)	3
94.368		Seminar in L.E.—(Operational Intelligence)	3
94.371	94.372	Man, Law, and Society I, II	6
94.375		Seminar in L.E.—(Organized Crime)	3
94.377		Seminar in L.E.—(Criminal Behavior)	3
94.389	94.390	Civil Law in Criminal Justice I, II	6
94.393	94.394	Evidence and Court Procedure I, II	6
94.395	94.396	Fire Investigation and Arson I, II	6
94.406		Legal Aspects of Security Operations	3
94.407		Introduction to Government Security Prog.	3

Total Credits**96**

Additional departmental offerings on selections of intensive courses appear on page 188.



Health Professions Programs

Marjorie Koretsky, Assistant Dean
Director, Health Professions Programs
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Consultants

Prof. Bynum Jackson, (College of Pharmacy & Allied Health), 437-3321
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Aims

Programs in Allied Health are offered through University College to help students prepare for advancement and service in hospitals and other health agencies through part-time study.

Degree programs, both associate and baccalaureate, are designed to provide professional specialization and general educational development. All programs are designed to meet the accreditation standards of the Council on Medical Education of the American Medical Association and of licensing or registration boards where such exist.

The Council on Medical Education (C.M.E.) is responsible for adopting essentials (minimal standards for A.M.A. accreditation) for allied health education programs with the advice of A.M.A. section councils, medical specialty societies and allied health organizations. The U.S. Commissioner of Education and the nongovernmental Council on Postsecondary Accreditation recognize the A.M.A. and collaborating organizations to accredit educational programs for established allied health occupations.

Course Distribution

It is the goal of Northeastern University to offer students a balanced educative background. To this end, the following curriculum design will be in effect for most programs:

Professional and professionally-related	35-50%
Basic and allied sciences	25-40%
Liberal arts (non-science)	25-40%

Students will choose electives to fulfill course distribution requirements and to equal the number of credits required for the specific degree.

Clinical Assignments

Clinical assignments are generally available for students whose programs require directed applied study in a clinical setting. In most instances didactic information is presented at the University while clinical practice is at various hospitals or other health agencies in the Greater Boston community. Positions for applied clinical studies are often offered on a competitive basis with the student's academic performance in both didactic and basic professional courses used as the basis for the student's acceptance. Academic credit earned during the practicum is usually applicable toward the degree requirement.

Students accepting clinical assignments in health facilities are expected to adhere to requirements of the facility, all of which are outside University control.

Health Science**Bachelor of Science Degree****quarter hours**

The Bachelor of Science Degree in Health Science is available to students holding registration or licensure (as defined by University regulations) in a specific health profession and trained in an approved program accredited by the appropriate medical association (American Medical Association, National League of Nursing, American Dental Association, etc.)

All students in this program should consult with a program adviser.

Distribution Requirements for the B.S. Degree

Liberal arts (non-science)	42
Sciences	44
Professional and professionally-related	45-48
Electives and/or transfer credit	40-43
To equal	174

A. Liberal Arts (Non-Science)**Required**

30.305	30.306	30.307	English I, II, III	9
				9

Humanities (Recommended Courses)

To be selected from areas beginning with the numbers:

- 26. Philosophy and religion
- 27. Fine arts
- 28. Music
- 29. Speech and theatre arts
- 30. English
- 31.-34. Modern languages
- 38. Journalism

Social Sciences (Recommended Courses)

To be selected from areas beginning with the numbers:

- 19. Psychology
- 20. Anthropology
- 21. Sociology
- 22. Political science
- 23. History
- 25. Social welfare
- 39. Economics

Electives in above areas

15

B. Sciences**Required Basic**

18.411	18.412		Biology I, II	8
18.424	18.425	18.426	Anatomy & Physiology I, II, III	9
18.421			Microbiology I	3
10.527	10.528		Mathematics I, II	6
or			or	or
41.301	41.302		Accounting Principles I,II	6
12.444	12.445	12.446	General Chemistry I, II, III	9
or			or	or
12.407	12.408	12.409	Modern Chemistry I, II, III	9

Required Advanced

To be taken after matriculation in B.S. program, and to be determined by profession.

Select 9 q.h. from the following:

18.431	18.432	18.433	Cell Biology I, II, III	8
18.438			Immunology	4
18.420			Medical Microbiology	4
18.457	18.458	18.459	Genetics I, II, III	8
12.431	12.432		Organic Chemistry I, II	8
86.346			Advanced Nutrition	3
86.347			Advanced Pharmacology	3
18.451	18.452	18.453	Histology-Organology I, II, III	6
18.474	18.475		Advanced Human Physiology I, II	6
87.310	87.311	87.312	Hematology; Morphologic Hematology I, II	9

C. Professional and Professionally Related**General Core Required**

86.303	86.304	Foundations of Medical Science I, II	6
86.305		Health Science Statistics	3

General Core Options

Select 18 q.h. from the following:

86.306		Hospital Law & Ethics	3
86.320	86.321	Princ. & Prac. of Comm. Health I, II	6
86.322		Principles and Practices of Comm. Mental Health	3
86.323	86.324	Public Health I, II	6
86.325		Health Care Delivery	3
86.326	86.327	Contemporary and Controversial Health Care Issues I, II	6
87.313		Epidemiology I	3
86.329		Environmental Problems and Health	3
86.381		Basic Pharmacology	3
86.380		Basic Nutrition	3

General Educational and Administrative—Required

86.307	86.308	Hospital Organization & Management I, II	6
86.330	86.331	Health Science Education I, II	6

Advanced Professional Options

Courses in professional, health education, or health administration areas to be taken after matriculation in B.S.

Select 6–9 q.h. from the following:

86.348	86.349	Health Care Finance I, II	6
86.310	86.311	Applied Health Management I, II	6
86.322		Methods and Materials of Public Health Education	3
86.333	86.334	Medical Care and Current Social Problems I, II	6
86.337		Oral Microbiology	3
86.338	86.339	Advanced Periodontology I, II	6
87.314		Epidemiology II	3
86.312	86.313	Communications for Health Care Personnel I, II	6

D. Electives

Electives and/or transfer credits, to equal 174

Health Management**Bachelor of Science Degree****quarter hours**

Includes special concentration of professional courses to prepare for licensure examination in Long Term Care Administration.

Distribution Requirements for the B.S. Degree

Basic Courses	33
Arts and Sciences	45
Management	33
Health Care Administration	30
Health Care Management Concentration Option I or II	33

Basic Courses—Required

10.527	10.528		Mathematics I, II	6
19.301	19.302	19.303	Psychology I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.301	39.302	39.303	Economics I, II, III	9

Arts and Sciences Core Courses—Required

18.311	18.312	18.313	Biology I, II, III	12
18.324	18.325	18.326	Anatomy & Physiology I, II, III	9
21.301	21.302	21.303	Sociology I, II, III	9
22.301	22.302	22.303	Principles of Political Science I, II, III and/or Social Science or Humanities (at least two courses must be in sequence)	15

Management Courses—Required

86.305		Health Science Statistics	3
41.301	41.302	Accounting Principles I, II	6
44.301		Introduction to Financial Management I	3
45.301		Management and Organization I	3
49.310		Electronic Data Processing I	3
86.312	86.313	Communication for Health Care Personnel I, II	6
49.404		Personnel Management I	3
49.373		Information Processing in Medicine	3
45.303		Principles and Practices of Management	3

Health Care Administration Courses—Required

86.306		Hospital Law & Ethics	3
86.348	86.349	Health Care Finance I, II	6
86.303	86.304	Foundations of Medical Science I, II	6
86.300		Medical Terminology Survey	3
86.307	86.308	Hospital Organization and Management I, II	6
86.320		Principles and Practices of Community Health I	3
86.325		Health Care Delivery	3

Option 1 Long Term Care Administration

For licensure as a nursing home administrator, the Board of Registration of Nursing Home Administrators in Massachusetts requires an internship, a licensure examination, plus, as of January 1, 1978, a baccalaureate degree. The required courses in this option help prepare the student for the licensure examination in Massachusetts.

Required Courses				quarter hours
86.340	86.341	86.342	Long Term Care Administration I, II, III	9
86.343	86.344	86.345	Long Term Care Administration IV, V, VI	9
21.363			Social Gerontology	3

Electives

Select 12 quarter hours from the following, or other electives with permission of adviser.

63.301	63.302	63.303	Principles & Practices of Therapeutic Recreation I, II, III	9
86.381			Basic Pharmacology	3
86.380			Basic Nutrition	3
86.310	86.311		Applied Health Management I, II	6
86.328			Home Health Care	3
86.329			Environmental Problems and Health	3

Option 2 Community Health Management**Required Courses**

86.310	86.311	Applied Health Management I, II	6
86.321		Principles and Practices of Community Health II	3
87.313		Epidemiology I	3
86.323		Public Health I	3

Electives

Select 18 quarter hours from the following, or other electives with permission of adviser.

86.322		Principles and Practices of Community Mental Health	3
86.324		Public Health II	3
86.326	86.327	Contemporary and Controversial Health Care Issues I, II	6
86.328		Home Health Care	3
86.329		Environmental Problems & Health	3
21.360		Medical Sociology	3
87.314		Epidemiology II	3
86.381		Basic Pharmacology	3
86.380		Basic Nutrition	3

Total Credits**174**

Health/Medical Record Administration

Program Director: Prof. Judith Weilerstein, College of Pharmacy and Allied Health

The Profession The health/medical record administrator has varied responsibilities relating to health information systems. He/she may organize, operate, and manage medical record services. The program offers the student the opportunity to develop the capability to design health information and retrieval systems; to plan, organize and direct medical record services; to develop, analyze and evaluate medical records and indexes; to work with medical and administrative staffs in developing methods for evaluation of patient care, and in research projects utilizing health care information.

The Health/Medical Record Administration Program leading to a B.S. degree has been in effect at

Northeastern University since 1966. The professional certification program, open to students already holding baccalaureate degrees and offering the required professional courses, was instituted in 1967.

Northeastern University's Programs in Health Record Administration are approved by the Committee on Allied Health Education and Accreditation in cooperation with the American Medical Record Association.

In designated professional courses, (*) students must obtain a grade of C or better. Only one professional course may be repeated. Students who receive a grade of D in more than one will be asked to withdraw from the program.

Students applying for the clinical sequence of courses (86.375, 85.360, 86.376) must have a quality point average of 2.5 and the approval of their assigned Health Record Program adviser.

Health/Medical Record Administration

Bachelor of Science Degree

quarter hours

Completion of this program qualifies a student for admission to the professional registration examinations conducted by the American Medical Record Association.

Basic Courses—required

10.527	10.528		Mathematics I, II	6
19.301	19.302	19.303	Psychology I, II, III	9
30.305	30.306	30.307	English I, II, III	9
39.301	39.302	39.303	Economics I, II, III	9

Arts and Sciences Core Courses—required

18.411	18.412	18.413	Biology I, II, III	12
18.424	18.425	18.426	Anatomy & Physiology I, II, III *	9
21.301	21.302	21.303	Sociology I, II, III	9
22.301	22.302	22.303	Principles & Practices of Political Science I, II, III	9
or			or	or
23.301	23.302	23.303	History of Civilization I, II, III	9
39.311	39.312		Statistics I, II *	6
Humanities			Arts, English, Language, Philosophy, Music	9

Professional and Professionally-Related Courses—required

49.310			Electronic Data Processing I	3
49.400			Human Relations in Organizations I	3
86.362			Hospital Management for Medical Record Administrators *	3
86.358			Medical Record Computer Science *	3
86.306			Hospital Law and Ethics *	3
86.303	86.304		Foundations of Med. Science I, II *	6
86.301	86.302		Medical Terminology I, II *	4
86.353	86.354		Organization of the Medical Record Department I, II *	6
86.370	86.371	86.372	Medical Record Sci. I, II, III *	18
86.373	86.374		Medical Record Sci. IV, V *	12
86.375	86.360	86.376	Applied Medical Record Science I, II, III *	8

Elective Courses

22

Health/Medical Record Administration Certificate Program

Candidates who wish to qualify for admission to the professional examination leading to registration as a Medical Record Administrator, RRA, and who already hold a baccalaureate in another field of study from a college or university acceptable to Northeastern University, may undertake the following course work. Graduates of approved schools in medical record administration are eligible for the national registration examination given by AMRA. Passing this examination gives professional recognition as a Registered Record Administrator (RRA). Successful completion of this course sequence with a cumulative point average of 2.5 will lead to certification from University College that the candidate has completed a professional program in Health Record Science. In addition to the required courses listed below, candidates must complete one year of a natural science, such as biology, chemistry, microbiology, and a course in descriptive statistics. This requirement is in addition to the laboratory course in anatomy and physiology.

Candidates who wish to matriculate in this program must be interviewed by the Program Director. Ar-

rangements for this interview may be made through the Allied Health Professions Office, 206 Mugar Building. No candidate will be considered as matriculated until this requirement has been met.

Note: In addition to the required course work, proof of understanding of principles of descriptive statistics must be demonstrated. This requirement may be satisfied by successful completion of an approved statistics course at Northeastern or another University, or completion of University College course 39.311, Statistics I, with a grade of C or better.

Courses Required for Professional Certification

In the professional courses listed below, students must obtain a grade of C or better. Only one professional course may be repeated. Students who receive a grade of D in more than one course will be asked to withdraw from the program.

Students applying for the clinical sequence of courses (86.375, 86.360, 86.376) must have a quality point average of 2.5 and the approval of their assigned Health Record Program adviser.

Courses Required for Professional Certification

				quarter hours
18.424	18.425	18.426	Anatomy & Physiology I, II, III	9
86.306			Hospital Law & Ethics	3
86.303	86.304		Foundations of Medical Science I, II	6
86.301	86.302		Medical Terminology	4
86.370	86.371	86.372	Medical Record Science I, II, III	18
86.373	86.374		Medical Record Science IV, V	12
86.353	86.354		Organization of the Medical Records Dept. I, II	6
86.362			Hospital Management for Medical Record Administrators	3
49.310			Electronic Data Processing I	3
86.358			Medical Record Computer Sci.	3
86.375	86.360	86.376	Applied Medical Records Science I, II, III	8
86.325			Health Care Delivery	3

Total Credits

78

Medical Laboratory Science—Medical Technology

The Profession Medical Laboratory Science is that area of the health care unit which is concerned with the laboratory examination of material necessary for the proper monitoring of health and for the diagnosis and treatment of illness. Working in a variety of specialized fields such as bacteriology, blood banking, hematology, clinical chemistry, or as a generalist in all of these areas, the medical technologist is a respected and important health professional.

The associate degree medical laboratory technician is at a level in laboratory science where individuals have various degrees of responsibilities and usually work under the supervision of a medical technologist.

Graduates of medical technology and associate degree medical laboratory technician programs have held positions in hospital, private, and research laboratories. Some have served as sales and technical representatives for scientific supply and equipment companies. With additional education and experience, medical technologists may serve in administrative or educational positions. Graduate opportunities are available for qualified students at both the master's and doctoral level.

The baccalaureate program in medical technology is conducted in affiliation with several hospitals in the Boston area. These programs, approved by National Accrediting Agency for Clinical Laboratory Sciences and the Committee on Allied Health Education and Accreditation, lead to a Bachelor of Science degree and entitle students to write the national certification examinations given by either the National Certification Agency of Medical Laboratory Personnel or the Board of Registry and of the American Society of Clinical Pathology.

The associate degree medical laboratory technician program is also conducted in affiliation with hospitals in the Boston area. Appropriate certification examinations are also available at this level.

The basic medical laboratory science, basic science, and general education courses are offered evenings, but the advanced medical laboratory science courses and the clinical experience are only offered full-time days.

Prerequisite: Satisfactory completion of the Mathematics Placement Test or Introduction to Mathematics I and II (courses 10.301, 10.302).

Professional Requirements for the Associate Degree—Medical Laboratory Technician A clinical applied study program or appropriate substitute work experience is a required component of this degree. Work experience is acceptable if it meets the certification requirements of either the National Certification Agency for Medical Laboratory Personnel or the Board of Registry of the American Society of Clinical Pathologists. For students without appropriate work experience, clinical applied studies are generally available through the College of Pharmacy and Allied Health Professions.

Prerequisites for the clinical applied studies are a minimum of a 2.0 quality point average in the required courses and a "C" or better in the basic Medical Laboratory Science courses (MLS, see below). These basic courses are available during the evening and are offered directly through the College of Pharmacy and Allied Health Professions. Students register as special students in the basic college and tuition will be the same as that charged for all basic college MLS professional courses. These courses should be completed within three years of applying to the AD-MLT Clinical Applied Studies.

Students must apply for the six month associate degree Medical Laboratory Technician Clinical Applied Studies one year in advance of the anticipated time of entry to the courses. Students register as special students in the basic college and tuition is at the basic college rate.

Professional Requirements for the Bachelor of Science Degree Clinical Applied Study courses are available only full-time during the day and are offered directly through the College of Pharmacy and Allied Health Professions. Students must apply for the applied study component one year in advance of the anticipated time of entry of the applied study. A minimum of 4 quarters would be required for completion. Students register as special students in the basic college, and tuition is the same as that charged for all basic college medical laboratory science professional courses.

Prerequisites for the clinical applied study component include completion of all basic MLS courses with a "C" or better grade within five years of application to the applied study and completion of all other courses with a quality point average of 2.5 or higher.

Medical Laboratory Science—Medical Technology**Associate Degree****quarter hours****General**

30.305	30.306	30.307	English I, II, III	9
86.333	86.334		Medical Care and Current Social Prob.	6
86.306			Hospital Law and Ethics	3
10.307	10.308		College Algebra and Trigonometry	8

Biology

18.411	18.412	18.413	Biology I, II, III	12
18.424	18.425	18.426	Human Anatomy & Physiology	9
18.421			Microbiology I	3

Chemistry

12.444	12.445	12.446	General Chemistry I, II, III	9
12.427			Analytical Chemistry	4
12.431			Organic Chemistry I	4

MLS

87.300			Medical Laboratory Science Orientation	2
87.101			Basic Medical Laboratory Science	4
87.102			Basic Hematology	2
87.103			Basic Immunohematology	2
87.105			Basic Clinical Chemistry	4
87.104			Basic Clinical Microbiology	4

Electives

			Humanities	6
			Social Science	6
			Free	6

Total Credits**103**

Medical Technology**Bachelor of Science****Associate Degree in Medical Laboratory Science—Medical Technology****quarter hours**
103**Biology**

18.457	18.458	18.459	Genetics I, II, and Lab	8
18.431	18.432	18.433	Cell Biology I, II, and Lab	8

Chemistry

12.432	12.433		Organic Chemistry II and III	8
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Physics

11.304	11.305	11.306	General Physics I, II, III	6
87.302			Basic MLS Electronics & Instrumentation	2

Electives

	Humanities	3
	Social Science	3
	Free	6

Clinical Applied Study

See explanation on page 108.

87.252		Hematology	3
87.253		Immunohematology	2
87.254		Clinical Microbiology	5
87.255		Clinical Chemistry	5
87.162		Applied Hematology	3
87.163		Applied Immunohematology	2
87.164		Applied Clinical Microbiology	5
87.165		Applied Clinical Chemistry	5
87.203		Medical Serology and Immunology	2
87.204		Medical Parasitology	2
87.221		MLS Administration	2
87.226		MLS Education	2
87.281		MLS Seminar	2
87.280		MLS Special Topics	2
87.190		MLS Undergraduate Research	2

Total requirement**191**

Medical Laboratory Science—Hematology

The Profession Hematology is a specialty in the broader field of medical laboratory science. Hematology technologists may be employed in hospitals and clinical laboratories where they perform specific laboratory tests—including differential cell counts, bone marrow examinations, and other complex hematologic determinations—which aid in the diagnosis, treatment, and follow-up of infections, anemias, and leukemias. The hematology technologist may also perform coagulation studies which aid the diagnosis and treatment of bleeding disorders and the treatment of patients on anticoagulant therapy. The modern hematology laboratory is usually well equipped with electronic instruments which the technologist must operate and maintain. Additional responsibilities may include laboratory quality control and associated problem solving.

The current requirements for categorical certification in hematology are indicated by the Board of Registry of the American Society of Clinical Pathologists as follows:

A candidate for certification in hematology must meet at least one of the following requirements:

1. Certification in Medical Technology by the Board of Registry of the American Society of Clinical

Pathologists with a baccalaureate degree from an accredited institution, plus one year of satisfactory hematology experience in an acceptable laboratory within the three years immediately prior to application.

2. A baccalaureate degree in biological sciences or chemistry from a college or university accredited by a recognized regional accrediting agency plus two years of hematology experience in an acceptable laboratory.

Students should contact the American Society of Clinical Pathologists, Board of Registry, P.O. Box 4872, Chicago, Illinois 60680, for details concerning their eligibility to write the hematology examination.

The curriculum in hematology does not incorporate a clinical or applied study component, but is primarily designed for those who work in this field, giving them the opportunity to earn a baccalaureate degree with a concentration in the area of interest.

The Medical Laboratory Science professional courses, numbered in the 87.100 and 87.200 series, will be offered directly through the College of Pharmacy and Allied Health Professions. Students must register as special students of that basic college and tuition will be the same as that charged for all basic college Medical Laboratory Science professional courses.

Hematology**Bachelor of Science Degree****quarter hours****Biology**

18.411	18.412	18.413	Biology I, II, III	12
18.424	18.425	18.426	Human Anatomy and Physiology	9
18.421			Microbiology I	3
18.457	18.458	18.459	Genetics I, II and Lab	8
18.431	18.432	18.433	Cell Biology	8

Math

10.307	10.308		College Algebra and Trig. I, II	8
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Chemistry

12.444	12.445	12.446	General Chemistry I, II, III	9
12.427			Analytical Chemistry (summer intensive)	4
or			or	or
12.421	12.422	12.423	Analytical Chemistry I, II, III	9
12.431	12.432	12.433	Organic Chemistry I, II, III	12

Physics

11.304	11.305	11.306	General Physics I, II, III	6
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English

30.305	30.306	30.307	English I, II, III	9
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Medical Laboratory Science *Day school tuition

87.300			MLS Orientation (to be taken if not working in the field)	2
87.101 *			Basic MLS	4
87.102 *			Basic Hematology	2
87.104 *			Basic Clinical Microbiology	4
87.103 *			Basic Immunohematology	2
87.105 *			Basic Clinical Chemistry	4
87.190 *			Undergraduate Research	2
87.203 *			Immunology-Serology (Intensive)	2
87.204 *			Parasitology (Intensive)	2
87.211 *			Coagulation	2
87.213 *			Immunohematology	2
87.222 *			Histochemistry	2
87.302			Basic MLS Electronics & Instrumentation	2
87.311	87.312		Morphologic Hematology I, II	6
87.369	87.370		Health Science Education	6
87.301			Quality Control	3

Health Related

86.306			Hospital Law and Ethics	3
86.333	86.334		Medical Care and Current Social Problems	6
86.307	86.308		Hospital Organization and Management I, II	6

Electives

			Humanities	9
			Social Science	9
			Free electives	18

Strongly recommended electives are: histology, psychology, economics, sociology, statistics, hematology, computer course

Medical Laboratory Science—Cytotechnology

The Profession Cytotechnology is a specialty in the broader field of medical laboratory science. Cytotechnologists are normally employed in pathology laboratories, where they expertly examine slides of cells looking for minute abnormalities which are the early warning signs of cancer and related disease. Cytotechnology occupies an important place in clinical medicine, requiring a technologist with specialized laboratory training and a sound academic background.

The program, offered through University College and conducted in affiliation with the several hospitals which comprise the Boston School of Cytotechnology, leads to the Associate in Science, which is

awarded by University College. Completion of the program qualifies a student for admission to the professional examination conducted by the Board of Registry of the American Society of Clinical Pathologists.

The basic sciences and the general education courses are offered evenings, but the professional courses are offered only full-time, days, in cooperation with the affiliated hospitals. Students planning to enter the professional courses are advised to consult the program coordinator prior to the winter quarter preceding entrance to the hospital program.

Prerequisite: Satisfactory completion of the Mathematics Placement Test or the Basic Mathematics I and II courses (10.330 and 10.331).

Medical Laboratory Science—Cytotechnology

Associate in Science Degree

				quarter hours
Biology				
18.411	18.412	18.413	Biology I, II, III	12
18.424	18.425	18.426	Human Anatomy and Physiology	9
18.451	18.452	18.453	Histology—Organology I, II, III	6
18.421			Microbiology	3
Chemistry				
12.444	12.445	12.446	General Chemistry I, II, III	9
Mathematics				
10.307	10.308		College Algebra and Trigonometry	8
Medical Laboratory Science				
87.300			Medical Laboratory Science Orientation	2
87.101			Basic Medical Laboratory Science *	4
87.102			Basic MLS Hematology *	2
*For information relative to special tuition rates for these courses, call 437-3321.				
Health Related				
86.333	86.334		Medical Care and Current Social Problems I, II	6
86.306			Hospital Law and Ethics	3
Humanities				
30.305	30.306	30.307	English I, II, III	9
			Social science or humanities electives	12

At the completion of 90 quarter hours of the above courses, a student is eligible for Cytotechnology Practicum at an AMA-approved Hospital School of Cytotechnology. This is a twelve-month full time day certificate program. A special tuition rate of \$75 per credit applies to the following courses:

87.508			Introduction to Cytotechnology	2
87.528	87.538	87.558	Cytopathology I, II, III	6
87.568			Cytogenetics and New Concepts	2
87.598			Special Topics	2
87.608			Seminar: Cytopathology Criteria and Correlations	2
87.518	87.548	87.578	Applied Cytology I, II, III	12
87.618			Applied Cytology IV	2

Radiologic Technology

The program in Radiologic Technology is a joint offering of the University and several area hospitals. The classroom experiences are provided by the University, and the Laboratory Practicum is conducted at an assigned affiliated hospital. The Program is accredited by the Council on Medical Education of the American Medical Association.

The Radiologic Technologist is a respected member of the allied health team in the diagnostic and therapeutic environment of the clinic or hospital, and an important functionary in the production, quality control, and inspection laboratories of the industrial community. Medically-related responsibilities demand effective rapport with internists, surgeons, pathologists, nurses, and laboratory personnel while industrial competency requires close association with metallurgists, production and manufacturing specialists, engineers, and scientists.

Prerequisite: Candidates must have satisfactorily passed three years of math (Algebra I, Algebra II, and geometry), one year of biology, and one year of an additional science (chemistry or physics), at the high school level. In addition, applicants must satisfy general University requirements, and complete the University's Mathematics Placement Test satisfactorily. Candidates successfully meeting the above requirements will be scheduled for an interview with the Radiologic Technology Program Director.

Certificate Program The full-time day program (24 months) is a full-time day division of University College.

All graduates are eligible for certification by the American Registry of Radiologic Technologists.

Associate Degree Program This program (28 months) is a full-time day division of University College.

All graduates are eligible for certification by the American Registry of Radiologic Technologists.

Evening Program

Associate in Science Degree Candidates who wish to qualify for admission to University College for an Associate Degree in Science in Radiologic Technology must be certified by the American Registry of Radiologic Technology. Such certification shall be deemed as having completed the courses in the core program of the Certificate in Radiologic Technology.

Curriculum The core curriculum of certificate program (48 q.h.), except English and Math; include Radiology Practicum (12 q.h.).

Prerequisite: Satisfactory completion of the above program via certificate or registration by the American Registry of Radiologic Technologists.

Completion of the courses listed under **Evening Program** is required for Associate in Science Degree.

Full-Time Day Programs

Certificate Program

First Year

86.420	86.421	Radiologic Technology Orientation I and II	6
86.422	86.423	Radiologic Science I, II	8
86.424	86.425	Principles of Radiology I, II	8
86.426	86.427	Radiologic Photography and Exposure I, II	8
18.570	18.571	Gross Anatomy and General Physiology A, B	6
10.527	10.528	Mathematics I, II	6
30.305	30.306	English I, II	6

Second Year

86.460	86.461	Radiology Practicum I, II,	6
86.462	86.463	Radiology Practicum III, IV	6
		Clinical: (2,400 hours at assigned affiliate hospital)	—

Total Certificate

60

quarter hours

Radiologic Technology**Associate in Science Degree****First Year****quarter hours**

86.420	86.421		Radiologic Technology Orientation I, II	6
86.422	86.423		Radiologic Science I, II	8
86.424	86.425		Principles of Radiology I, II	8
86.426	86.427		Radiologic Photography and Exposure I, II	8
10.527	10.528	10.529	Mathematics I, II, III	9
18.570	18.571		Gross Anatomy and General Physiology A, B	6
18.411			Biology I	4
30.305	30.306		English I, II	6
86.460			Radiology Practicum I	3

Second Year

30.307			English III	3
18.412	18.413		Biology II, III	8
86.434	86.435		Advanced Radiologic Technology I, II	6
45.452	45.453		Management and Organization I, II	6
21.301	21.302		Sociology I, II	6
or			or	or
19.301	19.302		Psychology I, II	6
86.436			Radioactive Isotopes	3
86.437			Radiation Therapy	3
86.461	86.462	86.463	Radiology Practicum II, III, IV	9

Total Credits**102****Evening Program****Associate in Science Degree****quarter hours**

10.527	10.528	10.529	Mathematics I, II, III	9
30.305	30.306	30.307	English I, II, III	9
18.411	18.412	18.413	Biology I, II, III	12
45.301	45.302		Management and Organization I, II	6
21.301	21.302		Sociology I, II	6
or			or	or
19.301	19.302		Psychology I, II	6
86.434	86.435		Advanced Radiologic Technology I, II	6
86.436			Radioactive Isotopes	3
86.437			Radiation Therapy	3

Total Credits**102**

Therapeutic Recreation Services

Prof. Frank Robinson, Consultant
Therapeutic Recreation Services
Telephone 437-3157

Therapeutic Recreation, which is concerned with the revitalization of the mind, spirit, and skills of people in rehabilitation facilities, community settings, nursing homes, and hospitals, has emerged as an important part of the team concept in human services.

The certificate represents the criteria set by the program's consultant for having attained a basic level of competence to contribute to this field. At present there is no official licensing board for Therapeutic Recreation practitioners, and, therefore, the certificate does not have public standing.

The certificate and Associate Degree programs in University College include individual case studies, group dynamics, and motivational techniques, as well as field practicum experiences.

The associate degree program in therapeutic recreation has been designed to accommodate students who elect to pursue a B.S. degree in health management. If interested, contact the program director at 437-2425.

CURRICULUM

quarter hours

I. Certification—35 quarter hours	
Required professional courses	15
Required practicum	8
Required skill electives	6
Required professional electives	6
II. Associate Degree—95 quarter hours	
Required professional courses	18
Required practicum	8
Required professional electives	24
Required core courses	45

Therapeutic Recreation Services**Activity Leader Certificate Program****quarter hours****Professional Courses—required**

63.301	63.302	63.303	Principles and Practices of Therapeutic Recreation I, II, III	9
63.304	63.305		Group Dynamics and Leadership I, II	6
63.310	63.311		Field Practicum in Therapeutic Recreation I, II *	8
or			or	or
63.315	63.316		Independent Study **	8

* See course description for practicum prerequisites. The appropriateness of being given a practicum assignment will be determined by the Academic adviser. Petitions may be obtained in 204 Churchill Hall.

** Permission is required for this option.

Skill Electives

Select 6 q.h. from the following:

63.321		Social Recreation	3
63.322		Music Therapy	3
63.323	63.324	Arts and Crafts I, II	6
63.326		Media Resources and Techniques	3
63.327		Therapeutic Use of Dramatics	3

Professional Electives

Select 6 q.h. from the following:

63.330		The Process of Aging	3
63.331		The Nursing Home Experience	3
63.332		Therapeutic Rec. Rehabilitation	3
63.333		Therapeutic Recreation in Corrections	3
63.334		Camping for the Disabled	3
63.335		Activity and Movement Analysis	3
63.336		Mental Illness and Retardation	3
63.337		Therapeutic Recreation in Child Development	3
63.340		Leisure Counseling	3
63.341		Humanistic Approaches to Recreational Therapy	3
63.342		Leisure in Society	3
63.343		Community Recreation for the Handicapped	3

Total Credits**35**

Therapeutic Recreation Services**Associate in Science Degree****quarter hours****Required Professional Courses**

63.301	63.302	63.303	Principles and Practices of Therapeutic Recreation I, II, III	9
63.304	63.305		Group Dynamics and Leadership I, II	6
63.335			Activity and Movement Analysis	3
63.310	63.311		Field Practicum in Therapeutic Recreation I, II *	8
or			or	or
63.315	63.316		Independent Study **	8

* See course description for practicum prerequisites. The appropriateness of being given a practicum assignment will be determined by the academic adviser. Petitions may be obtained in 204 Churchill Hall.

** Permission is required for this option.

Skill and Professional Electives

Select 24 quarter hours from skill electives listings and professional electives listings in certificate program (on previous page).

24**Required Core Courses**

19.301	19.302	19.303	Psychology I, II, III	9
18.411	18.412		Biology I, II	6
18.424	18.425	18.426	Anatomy and Physiology I, II, III	9
21.363			Social Gerontology	3
30.305	30.306	30.307	English I, II, III	9
86.300			Medical Terminology Survey	3
86.303	86.304		Foundations of Medical Science I, II	6

Total Credits**95**

Education

Education Courses

Starting in September 1979, University College will offer a group of undergraduate education courses designed to aid in obtaining teacher certification in the State of Massachusetts. (Because of the variety of teaching majors, each student is cautioned to contact the Bureau of Certification of the State Board of Education to ascertain the specific requirements for certification in a particular teaching discipline.)

The University College program of six courses carrying a total of 23 quarter hours of credit includes the following courses.

	quarter hours
51.303 Introduction to Education	3
51.304 The Instructional Process	3
51.305 Curriculum Development	3
51.306 Methods and Materials I	3
51.307 Humanities Methods and Materials II *	3
51.308 Social Studies Methods and Materials II *	3
51.309 Student Teaching and Seminar	8

* Students should choose either 51.307 or 51.308 depending on their major and their certification desires.

All of these courses may be used as electives towards a degree in University College. Course descriptions are found on page 175.

Prerequisites for Student Teaching

Entry into 51.309 has the following prerequisites:

1. Completion of 130 quarter hours towards a Bachelor's degree in economics, English, history, music, political science, psychology, sociology-anthropology, and science. Students with majors in economics, psychology, and sociology-anthropology, intending to apply for certification in social studies, should complete a minimum of 24 quarter hours in history and/or political science.
2. Completion of 40 quarter hours in a teaching major (social studies, English, music, science).
3. An average (Q.P.A.) of at least 2.0 in a teaching major.
4. An overall average of at least 2.0.
5. Completion of a 3 quarter-hour course in adolescent development or 19.311 (Developmental Psychology I).
6. Completion of the following courses: 51.303, 51.304, 51.305, 51.306, and 51.307 or 51.308. (Stu-

dents are urged to complete 51.306 and 51.307 or 51.308 shortly before student teaching, 51.309).

Students are referred to the Chairman, Dept. of Curriculum and Instruction (College of Education) for advice on this program.

Special Programs

Core Career Courses for Women

University College offers a special group of personal assessment and career development courses for women. These courses have been designed to help meet the needs of women seeking entry-level managerial, professional, or technical jobs in business. Through these Core Career Courses, women may learn to analyze and think about specific jobs in business in terms of the competencies required to perform successfully in these positions. This process allows women to match their skills and abilities, regardless of their specific educational backgrounds, to those needed in high opportunity areas in business and industry. The Core Career Courses are also designed to acquaint women with the organizational dynamics of business settings and to help them develop a basic understanding of the quantitative and technical skills needed for various jobs in business.

A complete list of Core Career Courses may be found on page 182 of this Bulletin. These courses also serve as the foundation of University College's Women's Career Program.

Women's Career Program

The Women's Career Program at Northeastern University is a short-term, job-linked academic program that identifies, prepares, and sponsors women for employment in or promotion to entry-level managerial, professional, or technical positions in business and industry. The program has been specifically designed to introduce women who lack traditional forms of college-level training in business to the concepts and tools they will need for entry into these positions.

One important goal of the program is to help women identify their personal and professional competencies and adapt them to a business environment. For some women in the program these competencies may have been acquired through full-time paid employment; for others, through volunteer experience or experience gained in family roles.

The Women's Career Program as a whole is intended to help women identify and explore career options in business which traditionally have not been open to women and which many women have therefore ignored. At the same time, the Women's Career Program is actively engaged in a series of activities designed to encourage employers to be receptive to and to hire women with nontraditional credentials for entry-level managerial, professional, or technical positions.

Two procedures exist for acceptance into the Women's Career Program. A woman may be sponsored directly for the program by her employer, or a woman can apply independently for the program. For women in the first category, acceptance into the program is based on a company-designed screening process. For women in the latter category, acceptance is based on a competitive admissions process.

Curriculum The Core Career Courses for Women in management skills, career development, and organizational behavior provide the foundation of the Women's Career Program. In addition to these courses, each student completes a set of electives appropriate to her level of expertise in a business specialty of particular interest to her.

Electives are chosen with the assistance of program staff from among the many business administration courses offered through University College. Each woman's program of Core Career Courses and electives is designed to help her achieve the knowledge base and skills needed to obtain an entry-level managerial, professional, or technical position. Once a woman has attained such a job, the work she has done while in the Women's Career Program may enable her to take maximum advantage of the on-the-job training opportunities that can typically accompany this new position.

To complete the Women's Career Program a student must take nine courses. Women wishing to complete the Women's Career Program at a rapid rate may complete their required course work in three quarters. Women wishing to complete the Women's Career Program at a slower rate may take up to six quarters to complete their course work.

Sponsorship for Women's Career Program

The Women's Career Program has been developed in cooperation with a number of Boston area companies. Therefore it enjoys a special, two-way relationship with these companies.

The Women's Career Program serves as an important continuing education resource for a number of Boston area employers. Employers are encouraged to use the program in two ways. To ascertain whether a company now participates in the Women's Career Program or would like to participate, interested persons should contact a representative of the company's personnel and training office or call the Women's Career Program.

Company Sponsorship I Some employers use the Women's Career Program to prepare employees for specific promotions. Usually, an employer who uses the program for this purpose will have identified a promotion for a woman before having her enroll.

Company Sponsorship II A company need not guarantee a woman the opportunity for a promotion before encouraging her to enroll in one or more of University College's Core Career Courses for Women. Through tuition reimbursement programs and without the promise of a promotion, a limited number of companies have encouraged women employees to take one or more of the Core Career Courses. Companies have adopted this policy as one way of affording women employees the opportunity to identify and further assess their career goals and job-related competencies. Employers also find the quality of a woman's performance in her courses helpful in assessing her potential for particular types of managerial, professional, or technical positions.

Women's Career Program Sponsorship The Women's Career Program serves as an important career placement resource for women who are unemployed or who are not currently employed by one of the program's cooperating companies. Through its contacts with companies in the greater Boston area, the Women's Career Program works actively to help each woman in the program search for an appropriate entry-level managerial, professional, or technical position. The Women's Career Program cannot, of course, guarantee a job for every woman accepted into the program. However, a woman will be accepted for admission into the program only if the members of the selection committee strongly feel that she has a very good chance of achieving a position in business which is consistent with the program's goals.

Application Procedure

Acceptance into the Women's Career Program is competitive. To apply to the Program a woman must have completed the first courses (90.301, 90.305, and 90.310) in the University College curriculum of Core Career Courses for Women. Women are accepted into the program on an ongoing basis toward the end of each quarter.

For further information, contact the Women's Career Program, 203 Churchill Hall, telephone 617-437-2413.

Noncredit Courses

In order to meet the educational needs of today's complex and diverse society, University College offers a variety of noncredit courses throughout the academic year, including the summer. These courses are intended for enrichment purposes and cannot be applied as degree credit.

Information about noncredit course offerings can be obtained from:

Office of Special Programs
University College
102 Churchill Hall
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115
617-437-2400

Suggestions of new course offerings will be appreciated and can be addressed to the Office of Special Programs.



Course Descriptions

Not all the courses listed in this bulletin will be offered. A final list of courses to be offered will be contained in the University College Schedule of Courses, which gives the hours, days, and location of classes. This schedule is issued prior to the fall, winter, spring, and summer quarters.

Abbreviations

q.h.: quarter hours (credit earned)

cl.: hours required in class per week.

Prereq.: Prerequisite

Course Number Changes

In the fall of 1977, University College changed from a two-credit curriculum to a three-credit curriculum; consequently, course numbers have been changed. The specifics of the changes are listed under each of the individual programs.

Conversion Booklet

A conversion booklet is available for present and former students showing how the changes affect their status in the program.

Note for Mathematics and Physics courses offered by Lincoln College: Tuition for all courses in Lincoln College is at the rate of \$50.25 per quarter hour of credit.

10: Mathematics (Lincoln College)

Students intending to enroll in Mathematics 10.327 or 10.307 will be given a Mathematics Placement Test during the registration period. A satisfactory score on this test will entitle the student to enroll in course 10.327 or 10.307, while an unsatisfactory score will require that he or she enroll in the non-credit course 10.330 or 10.301 for additional preparation.

10.301 Introduction to Mathematics I (4 cl., non-credit)

A comprehensive review of high school algebra including: first degree equations, factoring, fractions, fractional equations, ratio and proportion, word problems, and concepts of plane geometry. *Prereq. none.*

10.302 Introduction to Mathematics II (4 cl., non-credit)

Algebraic operations with complex fractions, mixed expressions, proportions, square roots, radicals, quadratic equations, simultaneous equations, graphs, and fractional zero and negative exponents. The geometry of the right triangle, areas of polygons and circles, and loci problems. Basic slide rule operation. *Prereq. 10.301.*

10.303 Introduction to Mathematics (3 cl., non-credit)

An accelerated combination of 10.301 and 10.302. (Day Curriculum.)

10.307 College Algebra and Trigonometry I (4 cl., 4 q.h.)

Fundamental algebraic operations; complex numbers; radicals and exponents; functions; linear and quadratic equations; irrational equations; inequalities; variations; roots of polynomial equations. *Prereq. Math. Placement Test or 10.302.*

10.308 College Algebra and Trigonometry II (4 cl., 4 q.h.)

Logarithms; trigonometric functions of angles in degrees and radians; trigonometric identities and equations; right triangles; oblique triangles; complex numbers in trigonometric form; systems of equations; determinants. *Prereq. 10.307.*

10.316 Probability and Statistics I (2 cl., 2 q.h.)

Basic tools, e.g., sets, permutations, and combinations; probability and applications. *Prereq. 10.308, 10.329 or 10.335.*

10.317 Probability and Statistics II (2 cl., 2 q.h.)

Descriptive statistics, frequency distributions and probability density functions, normal and other distributions. *Prereq. 10.316.*

10.318 Probability and Statistics III (2 cl., 2 q.h.)

Bivariate distributions, correlation, statistical inference, and estimation regression. *Prereq. 10.317.*

10.320 Calculus I (4 cl., 4 q.h.)

Plane analytic geometry. Differentiation of algebraic functions. Rate, motion, maximum and minimum problems. Derivatives of higher order. Curve sketching. Basics in functions, limits, and continuity. *Prereq. 10.308 or 10.329.*

10.321 Calculus II (2 cl., 2 q.h.)

Integration of algebraic functions. Integration and differentiation of logarithmic, exponential, and trigonometric terms. Calculations of areas, volumes, and length of arc by definite integrals. *Prereq. 10.320.*

10.322 Calculus III (2 cl., 2 q.h.)

Differentiation and integration of inverse trigonometric functions. Integration by parts, substitution, and tables. The Trapezoidal and Simpson Rules. The application of the differential and integral calculus to the Polar Coordinate System. Indeterminate forms. *Prereq. 10.321.*

10.323 Calculus IV (2 cl., 2 q.h.)

Vectors in the plane, vectors in three-dimensional space. Functions of more than one variable. Partial differentiation. Multiple integration. Infinite series. Taylor's and Maclaurin's Formula. *Prereq. 10.322.*

10.324 Differential Equations I (2 cl., 2 q.h.)

Vector analysis; matrices and linear algebra. *Prereq. 10.323.*

10.325 Differential Equations II (2 cl., 2 q.h.)

Ordinary differential equations—standard types of the first order; linear differential equations, especially with constant coefficients. Variation of parameters. *Prereq. 10.324.*

10.326 Differential Equations III (2 cl., 2 q.h.)

Series solutions of differential equations; Laplace transforms; Fourier series and orthogonal functions. *Prereq.* 10.325

10.527 Mathematics I (3 q.h.)

Sets, number systems, methods and applications of algebra: fundamental operations, special products, factoring, operations with fractions, exponents, and radicals. *Prereq.* *Math Placement Test* or 10.302 or 10.331.

10.528 Mathematics II (3 q.h.)

Linear, fractional, and quadratic equations; functions, relations, and graphs; systems of equations and inequalities; matrices and determinants. *Prereq.* 10.527.

10.529 Mathematics III (3 q.h.)

Ratio, proportion, and variation; logarithms, progressions, mathematical induction, the binomial theorem, permutations and combinations, probability. *Prereq.* 10.528.

10.330 Basic Mathematics I (2 cl., non-credit)

A review of elementary algebra; algebraic expressions and operations, equations, word problems. *Prereq.* none.

10.331 Basic Mathematics II (2 cl., non-credit)

Further review; operations with polynomials, factoring, fractional expressions, word problems. *Prereq.* 10.330.

10.532 Mathematics for Business Management I (3 q.h.)

Topics in mathematics generally applicable to business management. Logic, set theory, probability for decisions under uncertainty; survey of mathematical models, linear models. *Prereq.* 10.529 or equivalent.

10.533 Mathematics for Business Management II (3 q.h.)

Business applications of statistics, mathematics of finance, linear programming, matrix algebra and applications. *Prereq.* 10.532.

10.534 Mathematics for Business Management III

(3 q.h.)

Directed graph models, markov chains, theory of games, utility theory, statistical decision theory. *Prereq.* 10.533.

10.351 Advanced Mathematics I (Numerical Analysis)

(2 cl., 2 q.h.)

Basic methods of numerical analysis—roots by iteration; approximating polynomials and interpolation; least squares fitting; numerical integration; approximate solution of ordinary differential equations—problems employing the electronic computer. *Prereq.* 09.353 and 10.326.

10.352 Advanced Mathematics II (2 cl., 2 q.h.)

Introduction to partial differential equations, boundary-value problems, Sturm-Liouville systems. *Prereq.* 10.351.

10.353 Advanced Mathematics III (2 cl., 2 q.h.)

Special topics in analysis. *Prereq.* 10.352.

10.361 Modern Algebra I (2 cl., 2 q.h.)

Sets; binary operations; mappings; rings, integers, fields; rationals; reals, bases for computer applications; Euclidean algorithm; primes. *Prereq.* 10.308, 10.529 or 10.335.

10.362 Modern Algebra II (2 cl., 2 q.h.)

Field of complex number; groups; subgroups; polynomial rings; homomorphisms; isomorphisms; ideals. *Prereq.* 10.361.

10.363 Modern Algebra III (2 cl., 2 q.h.)

Vector spaces; linear transformations; dependence, independence; dimension applications to engineering, science, and business. *Prereq.* 10.362.

10.364 Modern Applied Algebra (4 cl., 4 q.h.)

Introduces the language of abstract algebra to the following topics: graphs, finite state machines, programming languages, Boolean Algebra, lattices, coding for communication channels, and radar. Algebraic theory of linear systems. *Prereq.* 10.361, 10.362, and 10.363.

10.421 Calculus—A (4 cl., 4 q.h.)

Applications of derivatives to curve-sketching; antidifferentiation; the definite integral, with applications; calculus of non-algebraic functions—logarithmic, exponential, and trigonometric. Calculus of inverse trigonometric functions; techniques of integration; polar coordinates; the conic sections; vectors in a plane; indeterminate forms, L'Hospital's Rule. *Prereq.* 10.320.

10.422 Calculus—B (3 cl., 4 q.h.)

Calculus of functions of several variables, partial differentiation, multiple integrals, infinite series. Vector analysis; matrices and linear algebra. *Prereq.* 10.421.

10.423 Differential Equations (4 cl., 4 q.h.)

Ordinary differential equations—standard types of the first order; linear differential equations, especially with constant coefficients; Laplace transforms, series solutions of differential equations. Fourier series and orthogonal functions. *Prereq.* 10.422.

11: Physics (Lincoln College)**11.301 Introductory Physics I** (4 cl., non-credit)

A survey of physical principles and theories related to field of mechanics. Emphasis is placed upon the solution of applied problems. *Prereq.* None.

11.302 Introductory Physics II (4 cl., non-credit)

Extension of principles in mechanics and introduction of concepts in heat, sound, light, electricity, and magnetism. *Prereq.* 11.301.

11.304 General Physics I (2 cl., 2 q.h.)

Survey of Newtonian mechanics; kinematics and dynamics of particle motion; projectile and circular motion; rotational motion; conservation laws of energy and momentum. *Prereq.* 10.527 or concurrently.

11.305 General Physics II (2 cl., 2 q.h.)

Temperature; heat energy; mechanical equivalent of heat; wave motion; sound; Doppler's effect; properties of light; simple optical systems. *Prereq.* 11.304.

11.306 General Physics III (2 cl., 2 q.h.)

Fundamentals of electricity and magnetism; fields; potential; electric current; inductance; capacitance; electromagnetism; a-c and d-c series circuits. *Prereq.* 11.305.

12: Chemistry

Consultant: Prof. K. Weiss, Chairman, Chemistry Dept. (Arts and Sciences College)

12.407 Modern Chemistry I (Introduction to Inorganic Chemistry) (2 cl., 2.4 lab, 3 q.h.)

Fundamental ideas of matter and energy, chemical bonding, chemical energy, water and solutions, colloids, ionic reactions, oxidation and reduction, acidity, radioactivity, air and water pollution. Topics will usually be discussed from the viewpoint of recent developments. The laboratory deals with experiments related to the lecture material. *The required laboratory for this course is designated 12.607, Lab for 12.407, and generally meets on the same night. You must register also for this laboratory to receive credit for 12.407.* (Laboratory fee)

12.408 Modern Chemistry II (Introduction to Organic Chemistry) (2 cl., 2.4 lab, 3 q.h.)

Classes of organic compounds, including hydrocarbons, alcohols, ethers, aldehydes, ketones, carboxylic acids, esters, amines, amides, and carbohydrates, including their relationship with modern biology. The laboratory deals with experiments related to the lecture material. *The required laboratory for this course is designated 12.608, Lab for 12.408, and generally meets on the same night. You must register also for this laboratory to receive credit for 12.408.* Prereq. 12.407 or equiv. (Laboratory fee)

12.409 Modern Chemistry III (Introduction to the Chemistry of Living Bodies) (2 cl., 2.4 lab, 3 q.h.)

Includes fats, proteins, enzymes, chemistry of digestion, and the chemical reactions of body fluids. The laboratory deals with experiments related to the lecture material. *The required laboratory for this course is designated 12.609, Lab for 12.409, and generally meets on the same night. You must register also for this laboratory to receive credit for 12.409.* Prereq. 12.408 or equiv. (Laboratory fee)

12.415 Biochemistry I (3 cl., 3 q.h.)

The first quarter of a three quarter sequence. The sequence will try to cover introduction to the biochemistry of the cell, including the occurrence, chemistry, and metabolism of carbohydrates, lipids, proteins, and nucleic acids. Prereq. 12.433 or equiv.

12.416 Biochemistry II (3 cl., 3 q.h.)

Continuation of Biochemistry I. Prereq. 12.415 or equiv.

12.417 Biochemistry III (3 cl., 3 q.h.)

Continuation of Biochemistry II. Prereq. 12.416 or equiv.

12.421 Analytical Chemistry I (2 cl., 2.4 lab, 3 q.h.)

Analytical procedures and techniques. Principles and practice of gravimetric methods of analysis. Laboratory work usually involves procedures and techniques of gravimetric analysis. *The required laboratory for this course is designated 12.621, Lab for 12.421, and generally meets on the same night. You must register also for this laboratory to receive credit for 12.421.* Prereq. 12.446 or equiv. (Laboratory fee)

12.422 Analytical Chemistry II (2 cl., 2.4 lab, 3 q.h.)

Principles and practice of titrimetric methods of analysis. The laboratory work usually involves the procedures and techniques of volumetric analysis. *The required laboratory for this course is designated 12.622, Lab for 12.422, and generally meets on the same night. You must register also for this labor-*

atory to receive credit for 12.422. Prereq. 12.421 or equiv. (Laboratory fee)

12.423 Analytical Chemistry III (2 cl., 2.4 lab, 3 q.h.)

Theories of spectrophotometry, chromatography, and selected electroanalytical methods. The laboratory usually involves instruments and procedures for electrometric and optical methods of chemical analysis. *The required laboratory for the course is designated 12.623, Lab for 12.423, and generally meets on the same night. You must register also for this laboratory to receive credit for 12.423.* Prereq. 12.422 or equiv. (Laboratory fee)

12.427 Analytical Chemistry (Lectures and laboratory, 4 q.h., summer quarter only.)

Survey of principles and theories of volumetric, gravimetric, and instrumental analysis. Application made in the laboratory with analyses of unknown samples. *The required laboratory for this course is designated 12.627, Lab for 12.427, and generally meets on a different night. You must register also for this laboratory to receive credit for 12.427.* Prereq. General Chemistry or equiv. (Laboratory fee)

12.431 Organic Chemistry I (2 cl., 4 lab and disc., 4 q.h.)

Nature of carbon in organic compounds. General principles of structure, nomenclature, preparation, uses, and reactions of aliphatic hydrocarbons: alkanes, alkenes, alkynes, dienes, cycloalkanes. Position and geometric isomerism. Introduction to free radical and ionic mechanisms of reactions. The laboratory generally deals with the preparation and properties of compounds discussed in lecture. *The required laboratory and discussion for this course is designated 12.631, Lab for 12.431, and generally meets on a different night. You must register also for this laboratory and discussion to receive credit for 12.431.* Prereq. 12.446 or equiv. (Laboratory fee)

12.432 Organic Chemistry II (2 cl., 4 lab and disc., 4 q.h.)

Structure of benzene, electrophilic aromatic substitution reactions. General principles of structure, nomenclature, preparation, uses, and reactions of the various types of organic compounds, including: alcohols, alkyl and aryl halides, ethers and epoxides, and carboxylic acids. Optical isomerism and introductory chemical kinetics will be discussed. The laboratory generally deals with the preparation and properties of compounds discussed. *The required laboratory and discussion for this course is designated 12.632, Lab for 12.432, and generally meets on a different night. You must register also for this laboratory and discussion to receive credit for 12.432.* Prereq. 12.431 or equiv. (Laboratory fee)

12.433 Organic Chemistry III (2 cl., 4 lab and disc., 4 q.h.)

Continuation of 12.432 with emphasis on the application of chemical conversions to synthetic problems. Functional derivatives of carboxylic acids, sulfonic acids and their derivatives, amines, diazonium compounds, phenols, aldehydes, and ketones. The laboratory generally deals with the preparation and properties of compounds discussed. *The required laboratory and discussion for this course is designated 12.633, Lab for 12.433, and generally meets on a different night. You must register also for this laboratory and discussion to receive credit for 12.433.* Prereq. 12.432 or equiv. (Laboratory fee)

12.441 Physical Chemistry I (3 cl., 3 q.h.)

Thermodynamics, thermochemistry, First and Second Laws, entropy and free energy in spontaneous processes. *Prereq.* 10.323, 11.306, and 12.446 or equiv.

12.442 Physical Chemistry II (3 cl., 3 q.h.)

Chemical equilibria, acids and bases, electrochemistry, colligative properties, phase diagrams, thermodynamics of multicomponent systems. Kinetic molecular theory. *Prereq.* 12.441 or equiv.

12.443 Physical Chemistry III (3 cl., 3 q.h.)

Kinetics, quantum chemistry, photochemistry. *Prereq.* 12.442 or equiv.

12.444 General Chemistry I (2 cl., 2.4 lab, 3 q.h.)

Fundamental concepts: symbols, formulas, equations, atomic weights, and calculations based on equations. Gases, liquids, solutions, and ionization. The laboratory generally deals with experiments related to the lectures. *The required laboratory for this course is designated 12.644, Lab for 12.444, and generally meets on the same night. You must register also for this laboratory to receive credit for 12.444. Prereq.* 10.327 or equiv. (or taken concurrently). (Not open to those students with credit for 12.311 or 12.314.) (Laboratory fee)

12.445 General Chemistry II (2 cl., 2.4 lab, 3 q.h.)

Atomic structure, bonding, and molecular structure. Oxidation and reduction reactions, equilibrium and kinetics. The laboratory generally deals with experiments related to the lectures. *The required laboratory for this course is designated 12.645, Lab for 12.445, and generally meets on the same night. You must register also for this laboratory to receive credit for 12.445. Prereq.* 12.444 or equiv. (Not open to those students with credit for 12.312 or 12.315.) (Laboratory fee)

12.446 General Chemistry III (2 cl., 2.4 lab, 3 q.h.)

Thermochemistry and electrochemistry. Acids, bases, and solubility product. Nuclear chemistry. Introductory organic chemistry and biochemistry. The laboratory usually deals with experiments related to the lectures. *The required laboratory for this course is designated 12.646, Lab for 12.446, and generally meets on the same night. You must register also for this laboratory to receive credit for 12.446. Prereq.* 12.445 or equiv. (Not open to those students with credit for 12.313 or 12.316.) (Laboratory fee)

12.450 Chemistry and the Environment (3 cl., 3 q.h.)

This course is designed to acquaint the non-science students with the chemical aspects of the environment. Topics discussed generally include: air and water pollution, nuclear fallout, radiation damage, the effects of pesticides, aerosols, food additives, etc., and their relationship to public health. The necessary foundation of chemical principles will be presented. *No prereq.*

12.451 Instrumental Analysis I (formerly Instrumental and Radiochemistry I) (3 cl., 3 q.h.)

Basic theory and instruments used in electrochemical analysis. Course generally includes such topics as electrode and cell potentials, potentiometric titrations, direct potentiometry (pH meters and specific ion electrodes), coulometry,

polarography, amperometry, electrogravimetry, and conductivity. *Prereq.* 12.423 or equiv. (This course and 12.452 can serve as preparation for certain graduate courses.)

12.452 Instrumental Analysis II (formerly Instrumental and Radiochemistry II) (3 cl., 3 q.h.)

Basic theory and instruments used in spectrochemical analysis. Course generally includes such topics as electromagnetic spectrum, ultraviolet and visible spectrophotometry, infrared spectrophotometry, X-ray analysis, fluorescence and phosphorescence, emission spectrophotometry, absorption spectrophotometry, and chromatography. *Prereq.* 12.451 or equiv. (This course and 12.451 can serve as preparation for certain graduate courses.)

12.453 Radiochemistry (formerly Instrumental and Radiochemistry III) (3 cl., 3 q.h.)

Radioactivity and nuclear reactions; production and study of nuclear reactions; equations of radioactive decay; nuclear states and radioactive processes; interaction of radiation with matter; radiation detection and measurement; statistics of radioactivity measurements; techniques for the study of radionuclides; tracers in chemical applications; and nuclear energy. *Prereq.* 12.452 or equiv.

12.460 Chemistry Workshop (3 cl., 0 q.h.)

A discussion and problem-solving session which will help reinforce and reexamine the material covered in 12.444, 12.445, and 12.446. Content is programmed according to needs of the students, and the classes are small and informal.

16: Earth Science

Consultant: Prof. D. Wilmarth, Earth Sciences (Arts and Sciences College)

16.301 Earth Sciences I (3 q.h.)

The fundamental components of the solid Earth and their modes of organization. The structure of the solid Earth, its mode of forming its crustal exterior. The role of the oceans in building and shaping the continental masses.

16.302 Earth Sciences II (3 q.h.)

The gaseous components of the fluid Earth. Their organization into masses, systems, and mass interaction. The long-range consequences of the fluid Earth's effects upon the solid Earth in the reshaping of landforms and the production of new land masses. *Prereq.* 16.301 or equiv.

16.303 Earth Sciences III (3 q.h.)

A study of the Earth as an object in space. The history of the Earth as identified in the solid materials of the Earth. The implications of the Earth's history for the other members of the solar system. The solar system as a model for the universe. *Prereq.* 16.302 or equiv.

16.304 Earth Sciences (Intensive) (9 q.h.)

A composite of 16.301, 16.302, and 16.303, as a one-quarter course.

16.311 History of Ancient World Sciences and Technologies (3 q.h.)

An in-depth study of selected sciences and technologies characterizing the ancient world. Classes are a combination

of lecture-discussion, seminars based upon independent research, and extensive outside reading. *No prereq.*

16.312 History of Modern World Sciences and Technologies (3 q.h.)

A continuation of 16.311, beginning with the period of the Western World Renaissance. Continues to the present with the implications of contemporary sciences and technologies for the immediate future. *Prereq. 16.311 or equiv.*

16.324 Principles of Geology I (3 q.h.)

A detailed analysis of the crustal components of the Earth, their modes of formation, and the forces involved in their shaping. The relationship of these factors to the structure and processes of the Earth's interior. *Prereq. 16.303 or equiv.* (Not open to students who have credit for 16.521.)

16.325 Principles of Geology II (3 q.h.)

The forces and processes involved in the alteration, transportation, and deposition of crustal materials; their effect on the Earth's landforms. The interactions of the oceans with the land masses. *Prereq. 16.324 or equiv.* (Not open to students who have credit for 16.521.)

16.326 Principles of Geology III (3 q.h.)

A detailed study of the sedimentary and radio-chemical deposits of the Earth. Their relevant contributions to understanding the history of the Earth. *Prereq. 16.325 or equiv.*

16.327 Descriptive Mineralogy (3 q.h.)

The significance of atomic structure to the crystalline forms of mineral materials. The forces and factors that are responsible for the formations of minerals in the rock materials of the Earth's crust. *Prereq. 16.324 or equiv.*

16.328 Igneous and Metamorphic Petrology (3 q.h.)

The details of volcanic factors that produce igneous rock types. The internal and external crustal forces and motions that re-form all previously existing rock types. *Prereq. 16.327 or equiv.*

16.329 Sedimentary Petrology (3 q.h.)

The processes and forces that provide the materials for sedimentary rock forms. The rock types that evolve with time and their stratigraphic significance. *Prereq. 16.328 or equiv.*

16.331 Principles of Oceanology I (3 q.h.)

In-depth study of the origin of the global ocean; the physical and chemical properties of sea water; development of ocean currents and their effect on land masses of the world; problems of ocean pollution. *Prereq. 16.303 or equiv.*

16.332 Principles of Oceanology II (3 q.h.)

The habitat zones and organisms of the sea. Economic importance of marine resources for expanding world population. *Prereq. 16.331 or equiv.*

16.333 Principles of Oceanology III (3 q.h.)

Physiography and structure of ocean basins; marine geological processes and features; sedimentation, erosion, shorelines, and bottom topography; methods and techniques of marine geological explorations. *Prereq. 16.332 or equiv.*

16.334 Fisheries Oceanology I (3 q.h.)

Survey of commercially important marine organisms; life and distribution of commercially important seaweed, shellfish, and fishes; population dynamics and fishery potential of the world's oceans; analysis of fishery stocks and sea farming. *Prereq. 16.333 or equiv.*

16.335 Fisheries Oceanology II (3 q.h.)

Examination of fishery methods and techniques around the world; recent technological advancement. Commercial products and applications of marine organisms; special emphasis on marine products of commerce from the New England area. Chemical, industrial, and dietary applications of marine products. *Prereq. 16.334 or equiv.*

16.336 Marine Resources (3 q.h.)

Quantitative and qualitative consideration of energy from the marine environment: current technological developments in the use of tidal power, off-shore oil, natural gas, thermal and nuclear energy from the sea. Food resources of the sea; analysis of world marine food production; marine food technology, conservation, and mariculture. Coastal zone recreational resources: beaches, artificial fishing reefs; shore erosion; SCUBA, boating, sailing, angling, and surfing. *Prereq. 16.335 or equiv.*

16.341 Principles of Meteorology I (3 q.h.)

An in-depth study of the composition and structure of the atmosphere. The issue of the solar energy input and the physical consequences for the dynamics of the atmosphere. *Prereq. 16.303 or equiv.*

16.342 Principles of Meteorology II (3 q.h.)

The formation and behavior of air masses. Consideration of the interactions of air masses, the formation of fronts and storms. *Prereq. 16.341 or equiv.*

16.343 Principles of Meteorology III (3 q.h.)

The practices and procedures of weather reporting and forecasting. The formulation of weather maps. The historical weather record and its value for the studies of world climatology. *Prereq. 16.342 or equiv.*

16.351 Principles of Astronomy I (3 q.h.)

The nature and scope of astronomy; the geocentric universe; the heliocentric universe; celestial reference systems; time and the calendar; the sun-moon earth system; astronomical instruments. *Prereq. 16.303 or equiv.*

16.352 Principles of Astronomy II (3 q.h.)

The solar system; the inner planets; the outer minor planets; the outer major planets; the telescopic planets; the asteroid belt; meteors; comets; the sun as a source of energy and center of organization. *Prereq. 16.351 or equiv.*

16.353 Principles of Astronomy III (3 q.h.)

The triangulation of space; stellar population; star color and motion; star systems; stellar evolution; galaxies. *Prereq. 16.352 or equiv.*

16.354 Observational Astronomy (3 q.h.)

An introduction to the planets, stars, and constellations that are visible to the naked eye. Lectures, the planetarium, and actual viewing sessions are all used during the course. Pri-

mary emphasis will be placed on those stars and constellations easily seen from mid-northern latitudes. *No prereq.*

16.355 Solar System Astronomy (3 q.h.)

A detailed examination of the individual components of the solar system. Contemporary results from the space probes are used to reassess our understandings of the origin and development of the solar system. *Prereq. 16.353 or equiv.*

16.356 Celestial Astronomy I (3 q.h.)

An examination of the sun as a model star. Variations of characteristics in single stars, star systems, stellar populations. The H-R diagram and stellar evolution. The significance of radio astronomy for stellar structure and stellar evolution. *Prereq. 16.355 or equiv.*

16.357 Celestial Astronomy II (3 q.h.)

The structure and organization of the Milky Way galaxy. The nature of inter-stellar and inter-galactic space, quasars, pulsars, black holes; cosmology. *Prereq. 16.356 or equiv.*

16.361 Principles of Physical Geography I (3 q.h.)

Physical assessment of the Earth as a spheroid; relations with the sun; geographic grid; map projections; illumination of the globe; geographic time studies and moon-tide relationships. *Prereq. 16.303 or equiv.*

16.362 Principles of Physical Geography II (3 q.h.)

Physical weather elements: temperature, pressure, moisture; cyclonic storms; role of weather elements in world climate. *Prereq. 16.361 or equiv.*

16.363 Principles of Physical Geography III (3 q.h.)

The Earth's landforms, their formation and description; particular emphasis given to the agents of deposition and erosion; the volcano, the river, the glacier, and ocean waves. *Prereq. 16.362 or equiv.*

16.367 Human and Cultural Geography (3 q.h.)

Spatial analysis of people throughout the world, their culture, cultural landscapes, cultural history, and cultural ecology. Provides for an understanding of differences in world populations. *Prereq. 16.363 or equiv.*

16.368 Economic Geography (3 q.h.)

A study of the physical and biological assets of the Earth, their locations, prevalence, use, and significance for humanity. *Prereq. 16.367 or equiv.*

16.369 Urban Geography (3 q.h.)

In-depth analysis of historical and present structure of cities; comparative world urbanism trends; historic city growth patterns; morphology; site and situations; central place theories; external and internal relations; economic base. *Prereq. 16.368 or equiv.*

16.371 Principles of Conservation I (3 q.h.)

Philosophy of conservation; historical development of the conservation movement in the U.S. since 1900; interactions of economics and conservation practices. *Prereq. 16.303 or equiv.*

16.372 Principles of Conservation II (3 q.h.)

Problems relating to the supply, use, and management of major renewable natural resources: forests, soil, wildlife, and water. *Prereq. 16.371 or equiv.*

16.373 Principles of Conservation III (3 q.h.)

Application of the theories and techniques of conservation; problems of urban resources; air and water pollution; recreational resources; the availability of funds. *Prereq. 16.372 or equiv.*

16.374 Conservation and the Nation (3 q.h.)

In-depth study of the current practices and problems in our nation; mineral resources availability and allocation; energy resources; atmospheric, fresh and salt water pollution; wildlife and endangered species. *Prereq. 16.373 or equiv.*

16.375 Conservation and the Community (3 q.h.)

Examination of the conservation problems at the local level; identification of the problem; the factors involved; the dimension of the problem; the responsibility of the community. *Prereq. 16.374 or equiv.*

16.376 Conservation Management (3 q.h.)

Assessment of current practices of the local community; sources of knowledge and assistance among the populace; agencies available to the community; nature and scope of practices needed; practicality of community action. *Prereq. 16.375 or equiv.*

18: Biology

Consultant: Prof. H. Wertz, Chairman, Biology Dept. (Arts and Sciences College)

Course Coordinator: Prof. F. A. Rosenberg (Arts and Sciences College)

18.407 Gross Anatomy and General Physiology I (3 cl., 3 q.h.)

Fundamental concepts of living organisms; chemical and biological characteristics of cellular metabolism. The skeletal system and its appendages. General nomenclature, anatomical names, and terms. *Prereq. none.*

18.408 Gross Anatomy and General Physiology II (3 cl., 3 q.h.)

The systems of the body and the relationships between them. The structure and function of each. *Prereq. 18.407 or equiv.*

18.409 Gross Anatomy and General Physiology III (3 cl., 3 q.h.)

Continuation of 18.408. *Prereq. 18.408 or equiv.*

18.411 Biology I (General) (3 cl., 3 lab., 4 q.h.)

Universal properties and processes of living organisms; cellular composition and cellular activities; inheritance and cellular control. *The required laboratory for this course is designated 18.611, Lab for 18.411, and generally meets on a different night. You must register also for this laboratory to receive for 18.411. Prereq. none. (Laboratory fee)*

18.412 Biology II (Animal) (3 cl., 3 lab., 4 q.h.)

Functional anatomy of animal organ systems, their interactions and environmental relationships. *The required laboratory for this course is designated 18.612, Lab for 18.412, and generally meets on a different night. You must register also for this laboratory to receive credit for 18.412. Prereq. 18.411 or equiv. (Laboratory fee)*

18.413 Biology III (Animal) (3 cl., 3 lab., 4 q.h.)

Systematic comparative study of the structure and functions of animals. Diversity of animals considered from the standpoint of evolutionary adaptation. *The required laboratory for this course is designated 18.613, Lab for 18.413, and generally meets on a different night. You must register also for this laboratory to receive credit for 18.413. Prereq. 18.412 or equiv. (Laboratory fee)*

18.419 Plant Biology (3 cl., 3 lab., 4 q.h.)

Systematic study of the structure and function of plants, principally vascular plants. Survey of the plant-like protists and monerans. *The required laboratory for this course is designated 18.619, Lab for 18.419, and generally meets on a different night. You must register also for this laboratory to receive credit for 18.419. Prereq. 18.411 or equiv. (Laboratory fee)*

18.420 Medical Microbiology (2 cl., 4 lab., 4 q.h.)

Major characteristics of disease-producing organisms. *The required laboratory for this course is designated 18.620, Lab for 18.420, and generally meets on a different day. You must register also for this laboratory to receive credit for 18.420. Prereq. A formal course or professional laboratory experience in bacteriology. (Laboratory fee)*

18.421 Microbiology I (2 cl., 3 lab., 3 q.h.)

Morphology and biochemistry of the bacteria. *The required laboratory for this course is designated 18.621, Lab for 18.421, and generally meets on a different night. You must register also for this laboratory to receive credit for 18.421. Prereq. 18.413 or equiv. (Laboratory fee)*

18.422 Microbiology II (2 cl., 3 lab., 3 q.h.)

Survey of pathogenic microorganisms. *The required laboratory for this course is designated 18.622, Lab for 18.422, and generally meets on a different night. You must register also for this laboratory to receive credit for 18.422. Prereq. 18.421 or equiv. (Laboratory fee)*

18.423 Microbiology III (2 cl., 3 lab., 3 q.h.)

Characteristics and role of microorganisms in the environment. *The required laboratory for this course is designated 18.623, Lab for 18.423, and generally meets on a different night. You must register also for this laboratory to receive credit for 18.423. Prereq. 18.422 or equiv. (Laboratory fee)*

18.424 Human Anatomy and Physiology I (2 cl., 2 lab., 3 q.h.)

Introduction to human anatomy; osteology; anatomy of the muscular system, respiratory system, digestive system, the vascular system, urogenital system. The laboratory generally includes a study of human bone and cat dissection. *The required laboratory for this course is designated 18.624, Lab for 18.424, and generally meets on the same night. You must register also for this laboratory to receive credit for 18.424. Prereq. 18.413 or equiv. (Laboratory fee)*

18.425 Human Anatomy and Physiology II (2 cl., 2 lab., 3 q.h.)

Principles of physiology and continuation of the study of human anatomy. The laboratory is mainly concerned with muscle physiology. *The required laboratory for this course is designated 18.625, Lab for 18.425, and generally meets on*

the same night. You must register also for this laboratory to receive credit for 18.425. Prereq. 18.424 or equiv. (Laboratory fee)

18.426 Human Anatomy and Physiology III (2 cl., 2 lab., 3 q.h.)

Continuation of the principles of physiology. The anatomy and physiology of the nervous system, physiology of the endocrine system. The laboratory generally deals with the physiology of respiration and the physiology of blood. *The required laboratory for this course is designated 18.626, Lab for 18.426, and generally meets on the same night. You must register also for this laboratory to receive credit for 18.425. Prereq. 18.425 or equiv. (Laboratory fee)*

18.430 Horticulture (3 q.h.)

The study of the science and art of plants, stressing the use of plants in the home and community. *The required laboratory for this course is designated 18.630, Lab for 18.430, and generally meets on the same day. You must register for this laboratory to receive credit for 18.430. Prereq. none. (Laboratory fee)*

18.431 Cell Biology I (3 cl., 3 q.h.)

Chemical composition of cells, structure of cells and organelles, transport processes, cell motion and excitability, growth. *Prereq. 18.413, 18.458, and 12.433 or equiv.*

18.432 Cell Biology II (3 cl., 3 q.h.)

Cellular energy supply, enzyme function, respiration and metabolism, photosynthesis and other synthetic pathways, control of cellular process. *Prereq. 18.431 or equiv.*

18.433 Cell Biology Laboratory (4 lab., 2 q.h.)

Laboratory techniques in cell biology; microscopy; structure and chemical composition of cells; enzyme measurements; photosynthesis; respiration; active transport; growth. *Each class session lasts longer than in 18.431 or 18.432. Prereq. 18.432 or equiv. (Laboratory fee)*

18.435 Advanced Horticulture (3 q.h.)

The advanced study of the art and science of using plants for home and community. Special emphasis will be accorded various philosophies involving plants and man. *The required laboratory for this course is designated 18.635, Lab for 18.435, and generally meets on the same day. You must register for this laboratory to receive credit for 18.435. Prereq. 18.430. (Laboratory fee)*

18.438 Immunology (2 cl., 4 lab., 4 q.h.)

Biological, chemical, and physical attributes of antigens and antibodies, together with their serological interactions. *The required laboratory for this course is designated 18.638, Lab for 18.438, and generally meets on a different day. You must register also for this laboratory to receive credit for 18.438. Prereq. 18.423, 12.433, or equiv. (Laboratory fee)*

18.451 Histology-Organology I (1 cl., 2 lab., 2 q.h.)

The morphology of cells and tissues. *The required laboratory for this course is designated 18.651, Lab for 18.451, and generally meets on the same night. You must register also for this laboratory to receive credit for 18.451. Prereq. 18.413 or equiv. (Laboratory fee)*

18.452 Histology-Organology II (1 cl., 2 lab., 2 q.h.)

The tissue components of the integumentary, digestive, and

respiratory systems. *The required laboratory for this course is designated 18.652, Lab for 18.452, and generally meets on the same night. You must register also for this laboratory to receive credit for 18.452. Prereq. 18.451 or equiv. (Laboratory fee)*

18.453 Histology-Organology III (1 cl., 2 lab., 2 q.h.)

The tissue components of the cardiovascular, excretory, reproductive, and endocrine systems. *The required laboratory for this course is designated 18.653, Lab for 18.453, and generally meets on the same night. You must register also for this laboratory to receive credit for 18.453. Prereq. 18.452 or equiv. (Laboratory fee)*

18.457 Genetics I (3 cl., 3 q.h.)

Mitosis, meiosis, and mendelian genetics. *Prereq. 18.413, 10.308 or 10.529.*

18.458 Genetics II (3 cl., 3 q.h.)

Chromosome mapping, mutations, translocation, chromosomal aberrations. *Prereq. 18.457 or equiv.*

18.459 Genetics Laboratory (4 lab., 2 q.h.)

Laboratory exercises involving Principles of Mendelian inheritance, linkage, crossing-over. Classical genetics utilizing *Drosophila*; biochemical studies utilizing *Neurospora*. *Each class session lasts longer than in 18.457 or 18.458. Prereq. 18.458 or equiv. (Laboratory fee)*

18.461 Ecology I (3 cl., 3 q.h.)

Environmental factors. The soil system. Water. The atmosphere. Temperature, light, wind, pressure. The physicochemical factors—CO₂, N, and mineral nutrients. Habitat. Distribution of plants and animals in the world according to temperature and precipitation. *Prereq. 18.413 or equiv.*

18.462 Ecology II (3 cl., 3 q.h.)

The ecosystem. Ecological niche. The producers, consumers, and decomposers. The pond ecosystem, desert ecosystem, forest ecosystem, and seashore ecosystem. Energy cycle and efficiency of energy utilization. Mass, weight, and energy pyramids. *Prereq. 18.461 or equiv.*

18.463 Ecology III (3 cl., 3 q.h.)

Population ecology. Biotic community. Population growth. Relations between the species. Symbiosis. Competition. Predation. Succession. *Prereq. 18.462 or equiv.*

18.464 Man and His Biosphere I (3 cl., 3 q.h.)

An ecological analysis of the human situation and man's interaction with other organisms. The necessary foundation of biological principles will be presented.

18.465 Man and His Biosphere II (3 cl., 3 q.h.)

A continuation of 18.464. *Prereq. 18.464 or equiv.*

18.474 Advanced Human Physiology (3 q.h.)

Study of human physiology emphasizing the cellular processes underlying organ functions and interactions and control of organ systems. Selected physiological topics will be considered from these viewpoints as time allows. Reading to supplement material covered in lecture will be required. *Prereq. 18.426 and 12.446 or equiv.*

18.601 Botony for Horticulture I (2 cl., 3 lab, 3 q.h.)

This course is designed to acquaint the gardener or hor-

ticulturist with the botanical principles behind good horticultural practice. Topics: basic anatomical and cellular structure of higher plants and basic growth functions of cell division, development, reproduction respiration, and photosynthesis. Horticultural plants will be used as examples. (Laboratory fee) *Prereq. None.*

18.602 Botony for Horticulture II (2 cl., 3 lab, 3 q.h.)

A sequel to Basic Botany I, 18.601, this course will cover more detailed physiological and anatomical aspects of plant structure, growth, and development. Included will be structural/functional stages of the plant life cycle: germinative hormones, tropisms, mineral and water uptake, light responses, and flower and seed production. (Laboratory fee) *Prereq. 18.601 or equivalent.*

18.606 Greenhouse Propagation and Germination (2 cl., 3 lab, 3 q.h.)

Survey of vegetative propagation techniques, and germination of herbaceous plant seeds. Greenhouse lab work will include practice with various forms of division, layering and spore propagation, and study of underlying botanical activities. (Laboratory fee) *Prereq. 18.601 or equivalent.*

19: Psychology

Consultant: Prof. Harlan Lane, Chairman; Psychology Dept. (Arts and Sciences College)

Associate Consultant: Prof. Charles Karis; Psychology Dept. (Arts and Sciences College)

19.301 Psychology I (3 q.h.)

An introductory survey of the historical backgrounds of psychology, psychological measurement and testing, and principles of animal and human learning.

19.302 Psychology II (3 q.h.)

Principles of sensory processing, perception, motivation and emotion, and social influences on behavior. *Prereq. 19.301 or equiv.*

19.303 Psychology III (3 q.h.)

Personality theory and measurement, behavior disorders, mental health, and psychotherapy. *Prereq. 19.302 or equiv.*

19.304 Statistics in Psychology I (3 q.h.)

Scales of measurement in psychological research, measures of central tendency, and variability. *Prereq. 19.303 or equiv. (Recommended for psychology majors.)*

19.305 Statistics in Psychology II (3 q.h.)

Measures of correlation, introduction to probability, and statistical distributions. *Prereq. 19.304 or equiv.*

19.306 Statistics in Psychology III (3 q.h.)

Parametric and non-parametric tests of significance, including chi square, t-test, F test, and simple analysis of variance. *Prereq. 19.305.*

Note: 19.304, 19.305, and 19.306 may not be taken in addition to Statistics (39.311, 39.312, 39.313).

19.307 Psychology (Intensive) (9 q.h.)

An introductory survey of the historical backgrounds of psy-

chology, psychological measurements and test, and principles of animal and human learning. Principles of sensory processing, perception, motivation and emotion, and social influences on behavior. Personality theory and measurements, behavior disorders, mental health, and psychotherapy. (Not open to students who have taken 19.301, 19.302, 19.303.)

19.308 Fundamentals of Psychology I (4 q.h.)

Basic concepts from most areas of psychological investigation, the experimental orientation to the study of behavior, including child development, individual differences, learning and social psychology. (Recommended for Psychology majors.) (Not open to students who have credit for 19.301, 19.302, 19.303.)

19.309 Fundamentals of Psychology II (4 q.h.)

The sensory basis of behavior, cognition, perception, motivation, emotions, normal and abnormal personality. (Recommended for Psychology majors.) *Prereq.* 19.308 or *equiv.* (Not open to students who have credit for 19.301, 19.302, 19.303.)

19.311 Developmental Psychology I (formerly Child Psychology I) (3 q.h.)

Genetic factors in development; biological, social, and intellectual development during preschool years; factors in psychological development during the middle-childhood years; psychological and physical changes during adolescence; attitudes toward peer groups and parental figures; vocational choice; and the determination of moral standards and values. *Prereq.* 19.309, 19.319, 19.303, or *equiv.* (It is highly recommended that 19.340 be completed prior to registration for this course.)

19.312 Developmental Psychology II (formerly Child Psychology II) (3 q.h.)

The behavioral examination of developmental abnormalities, as evidenced in mental retardation, childhood schizophrenia, child delinquency, hyperactivity, specific learning problems, and aging, is used to illuminate normal developmental processes. *Prereq.* 19.311 or *equiv.*

19.313 Developmental Psychology III (formerly Adolescent Psychology) (3 q.h.)

A continuation of 19.312. *Prereq.* 19.312 or *equiv.*

19.314 Personality I (3 q.h.)

A systematic study of the normal personality, its growth and development. Topics generally include: environmental and constitutional contributions; assessment of personality; research; and a survey of the major theories of personality. *Prereq.* 19.309, 19.319, or 19.303 or *equiv.*

19.315 Personality II (Laboratory) (3 q.h.)

Introduction to methods and areas of research in personality. Usually includes problems of measurement, behavioral and dynamic concepts, and a laboratory project. *Prereq.* 19.314 or *equiv.*

19.323 Motivation (3 q.h.)

Survey of the various aspects of motivation. Such areas as primary and secondary reinforcement, unconscious motiva-

tion, effacement motivation, and the assessment of motive will be considered.

19.324 Social Psychology I (3 q.h.)

The socialization process, social motives, interpersonal perception, group membership and structure. *Prereq.* 19.303 or *equiv.*

19.325 Social Psychology II (3 q.h.)

Attitudes, prejudice and ethnic relations, leadership, mass behavior and social movements, and the effects of mass media of communication. *Prereq.* 19.324 or *equiv.*

19.332 Industrial Psychology I (3 q.h.)

Psychology as applied to industry, including such topics as history, causation, selection and placement procedures, employee assessment, individual differences and their evaluation, and the place of psychological tests in industry. *Prereq.* 19.303 or *equiv.*

19.333 Industrial Psychology II (3 q.h.)

Personnel training and development, motivation and work, attitudes and job satisfaction, engineering psychology, human factors in accident causation. *Prereq.* 19.332 or *equiv.*

19.334 Industrial Psychology III (3 q.h.)

Supervision and leadership, morale, personnel counseling, the psychology of labor-management relations, human relations, and organizational behavior. *Prereq.* 19.333 or *equiv.*

19.336 Psychology of Thought (3 q.h.)

Psychological factors in intuition, imagination, problem-solving, information processing, and concept learning. *Prereq.* 19.303 or *equiv.*

19.337 Psychology of Language (3 q.h.)

The child's acquisition of language, verbal habits, the analysis and measurement of meaning, cultural determinants of linguistic behavior, communication processes, and recent research in psycholinguistics. *Prereq.* 19.303 or *equiv.*

19.338 Psychology of Learning I (3 q.h.)

Features the application of basic behavioral principles to behavioral development, behavior modification, language development, and programmed learning, and their relations to theoretical considerations in the learning process. *Prereq.* 19.303 or *equiv.*

19.340 Psychology of Learning II (Laboratory) (3 q.h.)

Through direct experience, students may gain proficiency in the laboratory analysis of behavior, and in evaluating common generalizations about human behavior. Students may design and perform experiments in animal and human learning, memory, decision processes, concept formation, and other topics of individual interest. *Prereq.* 19.338 or *equiv.*

19.341 Abnormal Psychology I (3 q.h.)

An introduction of the study of the etiology and dynamics of the abnormal personality. (Students should not take the Abnormal Psychology sequence if they have credit for 19.354, 19.355, Psychopathology I, II). *Prereq.* 19.303 or *equiv.*

19.342 Abnormal Psychology II (3 q.h.)

The symptomatology and treatment of the neuroses and psychoses. *Prereq.* 19.341 or *equiv.*

19.343 Abnormal Psychology III (3 q.h.)

Psychosomatic, psychopathic, and organic disorders; varieties of psychotherapy. *Prereq.* 19.342 or *equiv.*

19.344 Abnormal Psychology (Intensive) (9 q.h.)

Same as 19.341, 19.342, and 19.343. *Prereq.* 19.303 or *equiv.*

19.345 Psychological Therapies (3 q.h.)

A survey of techniques for treating deviant behavior, from classical psychoanalytical therapies through methods of behavior modification. *Prereq.* 19.343 or 19.355 or *equiv.*

19.349 Sensation and Perception I (3 q.h.)

An introduction to the nature of the perceptual world; the nature of object recognition and identification; spatial organization; contextual effects; learning and perception; and the influence of attitudinal, motivational, and personality factors on perception. *Prereq.* 19.303 or *equiv.*

19.350 Sensation and Perception II (Laboratory) (3 q.h.)

Students usually do laboratory experiments on seeing, hearing, touching, and tasting. Studies may include dark adaptation, loudness, binaural interaction, brightness constancy, two-point touch thresholds, information processing, and interactions between the senses. *Prereq.* 19.349 or *equiv.*

19.354 Psychopathology I (4 q.h.)

Recommended for psychology and other arts and sciences majors. A detailed consideration of the major forms of psychopathology, including the neuroses, the psychoses, psychosomatic disorders, conduct disorders, sociopathy, and mental retardation. Each disorder is considered in terms of its diagnostic and symptomatic features, its etiology, and its remediation. The principle forms of therapy are surveyed, including psychotherapies, behavioral therapies, somatic therapies, and community mental health programs. (Students should not take the Psychopathology sequence if they have credit for 19.341, 19.342, 19.343, Abnormal Psychology I, II, III). *Prereq.* 19.309 or *equiv.*

19.355 Psychopathology II (4 q.h.)

Recommended for psychology and other arts and sciences majors. Continuation of 19.354.

19.360 Psychology of Women (3 q.h.)

The examination, in both historical and contemporary context, of the body of knowledge studying woman, her function in social roles, and her behavior as determined genetically, physiologically, and psychologically. The research implications, future life styles, roles, and contributions of women.

19.361 Scientific Foundations of Psychology I (formerly Historical Development of Psychology I) (3 q.h.)

Historical development of psychology from its philosophical beginnings. *Prereq.* Two of the following: 19.315, 19.340, 19.350, 19.381.

19.362 Scientific Foundations of Psychology II (formerly Historical Development of Psychology II) (3 q.h.)

Major schools of psychology which have influenced modern psychological research, including functionalism, behaviorism, Gestalt psychology, and psychoanalysis. *Prereq.* 19.361 or *equiv.*

19.371 Senior Seminar in Psychology (3 q.h.)

Small groups of students meet to discuss topics in psychology of mutual interest. Each seminar has a different flavor, depending upon the student group and faculty. *Prereq.* 19.362 or *equiv.*

19.372 American Sign Language I (4 q.h.)

American Sign Language I is the first of a four-course sequence in conversational American Sign Language, the fourth most used language in the United States. The course focuses on frequently used signs, basic grammar rules, use of facial expressions, and presents some information about deaf people and their culture.

19.373 American Sign Language II (4 q.h.)

American Sign Language II is the second course offered in conversational American Sign Language. The focus of this course is on building of receptive and expressive sign vocabulary, fingerspelling, use of the signing space, facial expression and body postures. *Prereq.* 19.372 or *consent of instructor.*

19.374 Sign Language Interpreting I (4 q.h.) (formerly American Sign Language III-Interpreting)

First of three-course sequence on theoretical and practical aspects of simultaneous interpreting of English to various forms of American Sign Language and vice-versa. Lectures, discussions, and role playings cover definitions, ethics, client-interpreter relations, linguistic considerations, mechanics, and special considerations for different interpreting settings. Laboratory exercises focus on development of skills for accurate and smooth interpreting. These are individually tailored to start at student's most comfortable speed and lead to 140 words per minute. *Prereq.* 19.377 or *permission of instructor.*

19.375 Sign Language Interpreting II (4 q.h.)

This second course continues the topics of the first course on a more advanced level. Increased laboratory work focuses on solidifying and increasing skills in simultaneous interpreting. *Prereq.* 19.374 or *equiv.*

19.376 Sign Language Interpreting III (4 q.h.)

This third course continues discussions on variations of the topics covered in the previous courses. Laboratory work finalizes the skill development, preparing the student for practicum in interpreting. *Prereq.* 19.375 or *equiv.*

19.377 Intermediate American Sign Language I (4 q.h.)

This American Sign Language course emphasizes mastery of the receptive and expressive skills, fingerspelling, vocabulary development, and more complex grammatical structures. *Prereq.* 19.373 or *consent of instructor.*

19.378 Intermediate American Sign Language II (4 q.h.)

This course consists of intensive work on expressive and receptive skills in stories, dialogues, and poems. In addition, the course will cover topics in socio-linguistics aspects of various forms of manual English and their relation to American Sign Language. *Prereq.* 19.377 or *consent of instructor.*

19.379 American Sign Language for Service Professionals (4 q.h.)

Designed for people working in service professions that deal

with deaf people and must communicate with them, such as law enforcement officers, medical personnel, flight attendants, and firefighters. Focuses on basic conversational vocabulary, as well as vocabulary specific to various service professions. Introduces students to basic grammar rules, and to the cultural aspects of the deaf community.

19.380 Physiological Psychology I (3 q.h.)

How nerves function and work together in the nervous system; how our sense organs provide the brain with information about the outside world; how the brain acts to produce external observable behavior; and how such psychological concepts as perception, learning, motivation arousal, and emotion may relate to nervous system activity. *Prereq.* 19.309, 19.319, or 19.303, or *equiv.*

19.381 Physiological Psychology II (Laboratory) (3 q.h.)

Laboratory experiments based on evolution of the nervous system, sensory and motor mechanisms, motivation and emotion, sleep, attention, and perception, learning, and memory. *Prereq.* 19.380 or *equiv.*

19.382 Practicum in Sign Language Interpreting I (4 q.h.)

Sixty hours of sign language observation and interpreting under supervision of interpreters or staff in various settings arranged with the instructor. Twenty-four hours of seminar will be held to discuss ethics, professional conduct, and other problems that arise in student assignments. This sequence is designed to assist the student in preparing for the Massachusetts Registry of Interpreters for the Deaf Certification Evaluation. *Prereq.* 19.376 or *equiv.*

19.383 Practicum in Sign Language Interpreting II

(4 q.h.)

A continuation of 19.382. *Prereq.* 19.382.

19.384 Practicum in Sign Language Interpreting III

(4 q.h.)

A continuation of 19.383. *Prereq.* 19.383.

19.385 Psych-Social Orientation to Deaf People (4 q.h.)

The status of deaf people as a linguistic and cultural minority group. It is designed to try to give both lay people and persons experienced with deaf people systematic understanding of the various communication methods and the concomitant oral-manual controversy, nature of sign language and its varieties, educational and historical treatment to deafness and sociological and cultural make-up of the deaf community.

19.388 Drugs and Behavior (3 q.h.)

The application of quantitative behavior techniques in animals and man, to determine the behavioral effects of pharmacological agents. A systematic survey of the experimental literature. *Prereq.* 19.303 or *equiv.*

19.389 Impact of Psychology on Society (3 q.h.)

A consideration of such recent developments as the uses of intelligence and aptitude tests; psychosurgery and electroconvulsive therapy; techniques of behavior modification and control; minority and women's rights movements; direct brain stimulation by implanted electrodes; use of psychoactive drugs; use of the lie detector machine; and the application of experimental techniques to humans. *Prereq.* 19.303 or *equiv.*

19.391 Honors Program I (4 q.h.)

Prereq. *Approval of the Dean.*

19.392 Honors Program II (4 q.h.)

Prereq. 19.391.

19.393 Honors Program III (4 q.h.)

Prereq. 19.392.

19.499 Field Work in Psychology (6 q.h.)

Refer to page 67 describing field work courses. (To be discussed with Department Consultant or Major Adviser prior to registration.)

20: Anthropology

Consultant: (See Sociology)

20.301 Anthropology I (formerly Introduction to Physical Anthropology) (3 q.h.)

An introduction to elements of physical anthropology, covering such subjects as: the primates, fossil humans and evolution, problems of heredity and genetics, race and racial classifications, the bases of cultural behavior. (Not open to students who have credit for 21.401.)

20.302 Anthropology II (formerly Cultural Anthropology I) (3 q.h.)

An introduction to socio-cultural anthropology. Examines the nature of language, and the cultural institutions of human groups with simple foraging and horticultural adaptations. *Prereq.* 20.301 or *equiv.* (Not open to students who have credit for 21.402.)

20.303 Anthropology III (formerly Cultural Anthropology II) (3 q.h.)

The institutions and cultures of technologically advanced societies and states. *Prereq.* 20.302 or *equiv.*

20.304 Anthropology (Intensive) (9 q.h.)

Same as 20.301, 20.302, and 20.303.

20.321 Individual and Culture (formerly Culture and Personality) (3 q.h.)

Cross-cultural comparisons of the socialization and enculturation of children and adults with respect to roles, values, and personality. Course may examine theories and methods used in psychological anthropology.

20.331 Social Organization of Non-State Societies (formerly Primitive Social Organization) (3 q.h.)

Detailed studies of the institutions of peoples with collecting-hunting and horticultural subsistence economies.

20.332 Religion in Cross-Cultural Perspective (formerly Primitive Religion) (3 q.h.)

Comparative analyses of the rituals, beliefs, and religious institutions of various human groups.

20.333 Culture Change (formerly Acculturation) (3 q.h.)

An examination of the processes occurring in situations involving culture contact, conquest or colonialism.

20.337 Anthropological Theory (3 q.h.)

History of the major orientations and philosophies in anthropology: evolutionist, culture area and historical approaches,

and functional, structural, ecological, and cognitive modes of analysis.

20.341 Native North American Peoples (formerly North American Indians) (3 q.h.)

Examines the past and present circumstances of a number of native North American peoples.

20.344 African Peoples and Cultures (3 q.h.)

African geography, prehistory, and culture; the spectrum of societal complexity ranging from Mbuti egalitarianism to Ashanti federation and the problems of political, economic, and social change in contemporary Africa.

20.345 Ethnology of the Indian Sub-Continent (3 q.h.)

People and cultures of the South Asian sub-continent from Pakistan to Assam and the Himalayas to Ceylon, with particular attention to traditional tribal and peasant cultures.

20.346 Society in India (3 q.h.)

Family, kinship, and caste in India, with emphasis on an examination of change in modern times.

20.347 Latin American Peoples and Cultures (3 q.h.)

The tribal and peasant adaptations of native and Hispanic populations to changing conditions in Latin America.

20.348 Studying the Family Cross-Culturally (3 q.h.)

Kinship and family systems in a variety of cultural settings.

20.349 Folklore (3 q.h.)

Folklore, art, and song in various societies, and how it is studied. Contemporary American materials are examined.

20.350 Peasant Society and Culture (3 q.h.)

Analyses of representative case studies of traditional peasant cultures in the non-Western and Western world.

20.360 Language and Culture (3 q.h.)

The functions of language and other forms of communication in human society. An introduction to analyses of the relationship between patterns of communication and other aspects of culture.

20.401 Principles of Anthropology I (4 q.h.)

An introduction to elements of physical anthropology: primates, fossil humans and evolution, problems of heredity and genetics, race and racial classifications. Also may examine the nature of language and cultural adaptation. (Not open to students who have credit for 20.301 or 20.302.)

20.402 Principles of Anthropology II (4 q.h.)

Surveys the institutions of technologically simple non-Western societies, as well as those of technologically advanced societies and states. *Prereq.* 20.401 or *equiv.* (Not open to students who have credit for 20.302 or 20.303.)

20.499 Field Work in Anthropology (6 q.h.)

(Refer to page 67 describing field work courses.)

To be arranged with a departmental field work adviser prior to registration. *Prereq.* Major in Sociology-Anthropology and completion of 15 credits in Anthropology. (Students may receive credit for only one departmental field work course. Credit for 20.499 precludes credit for 21.499. Students who are eligible for departmental Honors courses may take any combination of field work and Honors totaling three courses.)

21: Sociology

Consultant: Prof. R. McAllister, Chairman, Sociology Dept. (Arts and Sciences College)

Associate Consultant: Prof. L. Leibowitz (Arts and Sciences College)

21.301 Sociology I (3 q.h.)

Basic concepts and theories relating to the study of humans as participants in group life with emphasis on social structure, culture, socialization, and the family. Course materials require competency in reading and writing skills. (Not open to students who have credit for 21.401.)

21.302 Sociology II (3 q.h.)

A continuation of Sociology I with major emphasis on primary groups, associations, social stratification, collective behavior, and population. Term papers or essays may be required. *Prereq.* 21.301 or *equiv.* (Not open to students who have credit for 21.401 or 21.402.)

21.303 Sociology III (3 q.h.)

A continuation of Sociology II emphasizing a critical analysis of American society with particular attention to problems of social, political, urban, and industrial change. *Prereq.* 21.302 or *equiv.* (Not open to students who have credit for 21.402.)

21.304 Sociology (Intensive) (9 q.h.)

Basic concepts and theories relating to the study of humans as participants in group life. Examines social structure, culture, socialization, the family, primary groups, associations, social stratification, collective behavior, population, and problems of social, political, urban, and industrial change. Term papers or essays may be required. (Not open to students who have taken 21.301, 21.302, 21.303.)

21.305 Drugs and Society (3 q.h.)

An introduction to the sociology of drugs. Examines social definitions of drugs, conditions of their use, and socialization into drug use. Considers deviant drug use and effects of social control on definitions and use. A range of licit and illicit drugs will be considered.

21.306 Sociology of Religion (3 q.h.)

An examination of the role of religious belief systems and institutions in classical and Western societies.

21.307 Sex in Society: The Study of Sex Roles (3 q.h.)

Analysis of historical and contemporary development in how men's and women's changing roles are related to the society-at-large.

21.308 Sociology of Literature (3 q.h.)

Sociological analyses of the contexts and content of literary productions, such as novels, song lyrics, sci-fi, and films.

21.309 Sociology of Socialist and Utopian Societies

(formerly Sociology of Socialist Societies) (3 q.h.)

Examines alternative social orders, comparing the ideology, economy, social organization, polity, child care, sex roles, etc., of such groups as the Hutterites, Amish, Kibbutzniks, Shakers, and such modern socialist states as China, the Soviet Union, Cuba, etc.

21.312 Social Research Methods I: Generating and Investigating Research Problems (4 q.h.)

Methods for producing knowledge through social research

will be examined. Emphasis will be placed upon the practical aspects of research, i.e., the problems that sociologists face in doing research and how they have solved these problems. Students will be required to design a small study.

21.313 Social Research Methods II: Tabulating and Analyzing Social Data (4 q.h.)

Methods of tabulating, presenting, summarizing and analyzing data. Students will be required to learn elementary descriptive and inferential statistics and how to use them. Statistics as a tool will be emphasized and students will be introduced to the use of the computer. *Prereq.* 21.312 or equiv.

21.314 Social Research Methods III: Doing Social Research (4 q.h.)

Students will be required to carry out the study they designed in Research Methods I, analyze data, and report results. The ethics and politics of social research will be discussed, as will relationships among social action, social research, and theory building. *Prereq.* 21.313 or equiv.

21.317 Social Theory I (formerly Foundations of Sociological Theory) (3 q.h.)

A historical survey of sociological theorists including the work of deTocqueville, Comte, Marx, Durkheim, Cooley, and others. *Prereq.* Consent of the instructor or 12 q.h. in sociology-anthropology.

21.318 Social Theory II (formerly Contemporary Sociological Theory I) (3 q.h.)

A study of major theoretical issues in sociology. Discussion concentrates on systematic questions and topics, as opposed to particular theorists, but material is drawn from theorists such as Weber, Simmel, Thomas, Mannheim, Merton, and Parsons. *Prereq.* 21.317 or equiv.

21.319 Social Theory III (formerly Contemporary Sociological Theory II) (3 q.h.)

A seminar in which the principal focus will be upon questions of theoretical interest, e.g. the problem of order, the problem of change, the role of the individual in change. Students will present papers in class. *Prereq.* 21.318 or equiv.

21.328 Social Stratification: Class, Status, and Power (3 q.h.)

A comparative study of the nature of class structure with emphasis on the United States. Discussion of such topics as theories of class structure, factors determining class membership, differential class behavior, and social mobility.

21.331 Social Change (3 q.h.)

An analysis of changing patterns in social and economic institutions and of modern social movements.

21.334 Social Control (3 q.h.)

The study of group membership as a determinant of behavior, analysis of status and role, patterns of authority, power, and group ideology as factors in the evaluation of conduct.

21.335 Political Sociology: Who Gets What (3 q.h.)

The social structure of political life emphasizing relationships in modern society between classes, occupations, racial and

ethnic groups, etc. Examines how levels of opportunity affect political activities and institutions.

21.338 (see 25.350)

21.339 (see 25.351)

21.340 (see 25.352)

21.341 Sociology of Sport (3 q.h.)

An analysis of games and sport from a sociological perspective with particular reference to contemporary American society. Included are such topics as the role of play in modern society, the social organization of specific games and sports and the relationship of organized sport to the larger society.

21.343 (see 25.343)

21.344 (see 25.344)

21.345 (see 25.345)

21.346 Sociology of Deviant Behavior (3 q.h.)

Analysis of a variety of social problems with relation to the organization of society. Particular attention will be given to alcoholism, sex offenses, drug abuse, mental disorder, and other responses to conditions of urban industrial society.

21.347 Social Problems (3 q.h.)

An overview of contemporary American social problems and the application of sociological concepts, methods, and principles to these problems.

21.350 Juvenile Delinquency (3 q.h.)

A study of factors in delinquency and an examination of their implications for prevention, rehabilitation, and treatment.

21.351 Family and Marriage I (3 q.h.)

A comparative and historical treatment stressing the past history and development of the family.

21.352 Family and Marriage II (3 q.h.)

A continuation of Family and Marriage I, emphasizing the backgrounds of contemporary problems in the context of functions, forms, and processes of this institution.

21.353 Intergroup Relations I (formerly Racial and Cultural Relations I) (3 q.h.)

A study of the relationships between various racial, national, cultural, and religious groups with emphasis on the historical development of black-white relationships in American society.

21.354 Intergroup Relations II (formerly Racial and Cultural Relations II) (3 q.h.)

A continuation of Intergroup Relations I, stressing the problems of contemporary minority peoples in American and other societies. *Prereq.* 21.353 or equiv.

21.356 Sociology of Inequality (formerly Sociology of Poverty) (3 q.h.)

An analysis of American class and ethnic differences in historical perspective, drawing on comparisons with other countries. Critical evaluation of sociological research and theories relating to the causes, effects, and societal responses to poverty. Suitable for students in applied fields,

such as nursing, criminal justice, education, allied health, pre-med, and pre-law.

21.357 Urban Sociology (3 q.h.)

Analyses of the various causes, characteristics, and effects of urbanization in several different cultures. Specific attention is given to the problem of urban and suburban living and the changing structure of the city.

21.358 Community Analysis (3 q.h.)

Demographic and ecological theories of man's relation to his physical environment. Development of the concept of community and discussion of community study methods. Contrasts between rural communities and urban neighborhoods. Discussion and evaluation of community action programs.

21.359 Seminar in Urban Studies (3 q.h.)

Interdisciplinary approaches to analyses of urban issues, continuing student projects. *Prereq.* One previous course in urban studies field.

21.360 Medical Sociology (3 q.h.)

Sociological concepts and research relating to the study of patterns of behavior in the areas of health and disease. Emphasis on the family, community, medical organizations, class, and status as social sub-systems related to the field of health.

21.361 Sociology of Mental Health (3 q.h.)

Sociological aspects of mental health and mental disorder: the social history of mental illness, epidemiological and cross-cultural approaches to mental disorder, the career of the mental patient, the functions of psychiatry in society, community and social treatment modalities, and social psychiatry.

21.363 Social Gerontology: The Aged in Society (3 q.h.)

An examination of social factors involved in aging, with specific reference to how biological and psychological age changes influence behavior, social roles, and cultural patterns. The relation of aging to social change and special provisions for the elderly.

21.364 Sociology of Childhood (3 q.h.)

An examination in both historical and contemporary context of the economic, political, psychological, and social roles and functions of the child. Special attention is given to the current legal and social status of children.

21.365 Sociology of Education (3 q.h.)

The comparative study of formal and informal educational systems. Emphasis will be placed on the structures and functioning of educational institutions for the larger societies of which they are a part.

21.370 Sociology of Occupations and Professions (3 q.h.)

Analysis of the social relations within occupational groups of occupational structure and of institutional aspects of an occupation. Relationships between supervisors, peers, colleagues, subordinates, and clientele; their significance for work-role behavior.

21.373 Sociology of Industry (3 q.h.)

Comparison of pre-industrial and industrial society, stressing the impact of industry on society and the relationship be-

tween industry, culture, and values. Diversification, specialization, human relations, and formal and informal groups are dealt with.

21.375 Sociology of Formal Organizations: Humans, Machines and Bureaucracy (3 q.h.)

A study of formal organizations and the principles that govern organizational life. Weber's theory of bureaucracy and the concept of authority; communication systems and other conceptions of formal organizations. The structure of work groups and their effect on the larger organization.

21.391 Honors Program I (4 q.h.)

Prereq. 21.312, 21.313, 21.314 and 21.317, 21.318, 21.319, and approval of the Dean. (Students may take any combination of field work and Honors totaling three courses.)

21.392 Honors Program II (4 q.h.)

Prereq. 21.391.

21.393 Honors Program III (4 q.h.)

Prereq. 21.392.

21.401 Principles of Sociology I (recommended for Majors) (4 q.h.)

An introduction to basic concepts and theories relating to the study of humans as participants in group life. Emphasis is placed on socialization, culture, social structure, primary groups, family, social stratification, and population. (Not open to students who have credit for 21.301 or 21.302.)

21.402 Principles of Sociology II (4 q.h.)

A continuation of Principles of Sociology I with emphasis on a critical analysis of American society with particular attention to problems of social, political, urban, and industrial change. *Prereq.* 21.401 or equiv. (Not open to students who have credit for 21.302 or 21.303.)

21.417 Social Theory I (Intensive) (4 q.h.)

A historical survey of sociological theorists, including the work of de Tocqueville, Comte, Marx, Durkheim, Cooley, Weber, Simmel and others. *Prereq.* Consent of the instructor or 12 q.h. in sociology-anthropology. (Not open to students who have credit for 21.317, 21.318, or 21.319.)

21.418 Social Theory II (Intensive) (4 q.h.)

A study of the major theoretical issues in sociology. Discussion concentrates on systematic questions and topics, but material is drawn from theorists such as Mannheim, Merton, Parsons. Students may be required to present papers in class on questions of theoretical interest: e.g. the problem of order, the problem of change, the role of the individual in change, etc. *Prereq.* 21.417 or equiv. (Not open to students who have credit for 21.317, 21.318, or 21.319.)

21.499 Field Work in Sociology (6 q.h.)

Refer to page 67 describing field work courses.

To be arranged with a departmental field work adviser prior to registration. *Prereq.* Major in Sociology-Anthropology and completion of 15 credits in Sociology. (Students may receive credit for only one departmental field work course. Credit for 21.499 precludes credit for 20.499. Students who are eligible for departmental Honors courses may take any combination of field work and Honors totaling three courses.)

25: Social Welfare

Course Coordinator: Prof. Lila Leibowitz, Sociology Dept. (Arts and Sciences College)

25.343 Introduction to Social Work Practice I (3 q.h.)

An introduction to the functions of the helping profession of social work, its settings and methods. Specific techniques such as interviewing, history taking, and recording skills are presented.

25.344 Introduction to Social Work Practice II (3 q.h.)

A continuation of Introduction to Social Work Practice I, with particular attention to the functioning of social workers in selected settings.

25.345 Introduction to Social Work Practice III (3 q.h.)

A continuation of Introduction to Social Work Practice II, with emphasis on enhancement of practice skills.

25.350 Human Services Professions (3 q.h.)

Explores what a human services agency is, how it comes into being, and how it grows and changes. Basic attitudes, values, skills, and knowledge of the human services worker are analyzed, with the reasons why people in modern society require the assistance of human services professionals. Human services are viewed from the eyes of clients as well as society as a whole. Fieldwork in a variety of public and private agencies and a good deal of independent activity are major components.

25.351 Sociology of Human Service Organizations (3 q.h.)

Examines and critiques the organizational literature oriented towards management of, and survival in, organizations. The focus is on the sociological and managerial aspects of organizational structure, goals, and environment. Topics include classical organizational behavior theory, bureaucracy, structure, technology, organizational design, communication, leadership, and staff-client relations. Open to students in human services, health care sociology, and organizational behavior.

25.352 Evaluation of Social Intervention (3 q.h.)

Introduces basic methods of research and evaluation relevant to social service and governmental agencies. Covers appropriate research and measurement techniques. Students evaluate a case of social intervention and critically review research and evaluation reports.

22: Political Science

Consultant: Prof. R. Gilbert, Chairman, Political Science Dept. (College of Arts and Sciences)

Associate Consultant: Prof. L.G. Bursley (College of Arts and Sciences)

22.301 Principles of Political Science I (3 q.h.)

Evolution of the nation-state. Analysis of basic political concepts. Study of basic forms of the contemporary political system.

22.302 Principles of Political Science II (3 q.h.)

Analysis of constitutional and totalitarian models. Study of

contemporary British and Soviet political systems. *Prereq.* 22.301 or equiv. or consent of instructor.

22.303 Principles of Political Science III (3 q.h.)

The American political system including study of civil rights. International politics and American foreign policy since 1945. *Prereq.* 22.302 or equiv. or consent of instructor.

22.304 Principles of Political Science (Intensive) (9 q.h.)

Evolution of the nation-state. Analysis of basic political concepts. Study of basic forms of the contemporary political system. Analysis of constitutional and totalitarian models. Study of contemporary British and Soviet political systems. The American political system including study of Civil Rights, International politics and American foreign policy since 1945. (Not open to students who have taken 22.301, 22.302, 22.303, or equiv.)

22.305 Contemporary Political Theory (3 q.h.)

Political ideas and systems of political thought from Machiavelli to the present. *Prereq.* 22.336 or equiv.

22.308 Research Methods (3 q.h.)

An introduction to some of the most common methods of carrying out research in the discipline of political science. Problems of theory construction, data-gathering, and a selection of analytical research tools including bibliographical aids and the computer are examined.

22.314 American Constitutional Law (3 q.h.)

A case analysis of the development of federalism, the separation of powers, and the role of the federal and state courts in constitutional development.

22.315 Civil Rights (3 q.h.)

An evaluation of the quality and content of civil liberties in the United States. Emphasis usually is placed on the first, fifth, sixth, fourteenth, and fifteenth amendments to the Constitution.

22.316 Public Administration I (3 q.h.)

An introduction to the theory, forms, and processes of administration at the national and state level.

22.317 Public Administration II (3 q.h.)

Selected problems. Case study approach to examination of relation between the theory and practice of public administration. *Prereq.* 22.316 or equiv.

22.318 Government and Politics of the States (3 q.h.)

A study of state and local government, problems, and the function and operational responses to them.

22.319 The Legislative Process (3 q.h.)

An institutional, functional analysis of the roles of Congress, the executive, and political parties in the legislative process.

22.320 The American Presidency (3 q.h.)

A multifaceted examination of the nation's Chief Executive: the presidential electoral process; the President's many constituencies; and the differing styles of various 20th-century Presidents. The constitutional and extra-constitutional powers of the office are some areas considered.

22.321 Public Administration (Intensive) (6 q.h.)

Same as 22.316 and 22.317.

22.328 Procedural Due Process (3 q.h.)

A study of due process in the American Constitutional scheme.

22.329 Comparative Politics (Intensive) (4 q.h.)

A comparative analysis of political culture, organization and behavior in different national settings.

22.333 Formulating American Foreign Policy (3 q.h.)

The constitution and political instruments for the formulation of American foreign policy.

22.334 Soviet Foreign Policy (3 q.h.)

A study of the evolution of Soviet foreign policy since 1917 with emphasis on the development of the international Communist movement.

22.335 International Relations (4 q.h.)

Elements and limitations on national power. Contemporary world politics, problems of war and peaceful coexistence.

22.336 Introduction to Political Theory (4 q.h.)

Development of the political ideas of the Western world. The major philosophers of Greece, Rome, The Christian Era, and the Renaissance. *Prereq.* 22.303 or *equiv.* (Not to be taken by students who have credit for 22.304.)

22.341 International Law (3 q.h.)

A procedural and substantive study of legal relations among nation states.

22.342 American Foreign Policy I (3 q.h.)

Recent and current American foreign affairs.

22.343 American Foreign Policy II (3 q.h.)

Recent and current American foreign affairs, continued. *Prereq.* 22.342 or *equiv.*

22.344 Government and Politics In the Soviet Union I

(3 q.h.)

An analysis of modern totalitarian theory and practice is followed by a study of the ideological and historical bases of the Soviet dictatorship. *Prereq.* 22.329 or *equiv.*

22.345 Government and Politics in the Soviet Union II

(3 q.h.)

A continuation of 22.344. A study of the Soviet federalism, party and state organization, with special attention to the problems of political succession. *Prereq.* 22.344 or *equiv.*

22.351 Current Political Issues (3 q.h.)

A topical analysis of the constitutional and political basis of selected problems in American political life.

22.360 Politics and Policies of the Developing Nations I (3 q.h.)

Colonialism and the struggles for independence are discussed and the common problems of developing nations are analyzed. Topics may include economic development, urbanization, cultural fragmentation, and revolution. *Prereq.* 22.329 or *equiv.*

22.361 Politics and Policies of the Developing Nations II (3 q.h.)

Based on the foundation provided in Part I, this course deals with efforts of developing countries to achieve rapid social,

economic, and political modernization. The frequency of military takeovers and the prevalence of corrupt, inefficient government bureaucracies are discussed. The democratic and authoritarian avenues toward development are compared and evaluated. *Prereq.* 22.360 or *equiv.*

22.370 Consumer Advocacy I (3 q.h.)

A pragmatic course designed to define and expand the role of consumers in the marketplace. It is intended to focus upon consumer issues which confront us daily, so that individuals may deal with them intelligently and effectively. While not designed to make students "consumer-lawyers," it will touch upon legal as well as social, economic, and political aspects of consumer problems.

22.371 Consumer Advocacy II (3 q.h.)

A continuation of 22.370. *Prereq.* 22.370 or *equiv.*

22.372 Consumer Advocacy III (3 q.h.)

A continuation of 22.371. *Prereq.* 22.371 or *equiv.*

22.391 Honors Program I (4 q.h.)

Prereq. Approval of the Dean.

22.392 Honors Program II (4 q.h.)

Prereq. 22.391.

22.393 Honors Program III (4 q.h.)

Prereq. 22.392.

22.401 Introduction to Political Science I (4 q.h.)

Basic political concepts and forces of organization from the classical Greeks to the modern nation-state. The Soviet Union and the United Kingdom are contrasted as contemporary illustrations of the institutional distinction between a totalitarian and constitutional system. (Not open to students who intend to receive credit for 22.301, 22.302, 22.303.)

22.402 Introduction to Political Science II (4 q.h.)

The development of operational liberty in the United States and its constitutional underpinnings are considered, together with an analysis of the national American political process and the conduct of recent American foreign relations. (Not open to students who intend to receive credit for 22.301, 22.302, 22.303.)

23: History

Consultant: Raymond H. Robinson, Chairman, Department of History, College of Arts and Sciences
Coordinator of Western Civilization and Adviser to History Majors: Gerald H. Herman, Department of History, College of Arts and Sciences

23.300 The Historian's Craft (3 q.h.)

The ways in which the historian studies the past with emphasis on research and writing.

23.301 History of Civilization I (3 q.h.)

A worldwide overview of the development of human institutions from evolution through the end of the European Middle Ages. Emphasis generally will be placed on the continuities and changes that occur within civilizations and on the similarities, differences, and relationships that exist among contemporary civilizations around the world. The course is

taught with a view to drawing out the implications of each historical period for our lives today.

23.302 History of Civilization II (3 q.h.)

The age of transition to the early modern world emphasizing the intellectual, technological, and political expansion of Europe and the reactions of the rest of the world to that expansion. Special attention generally will be given to such topics as the rise of dynastic states, the rise and fall of mercantilism, the scientific revolution, exploration and gunpowder technology, and order and revolution. The period is from the end of the European Middle Ages to the coming of the French Revolution in 1789.

23.303 History of Civilization III (3 q.h.)

The modern world from 1789 to the present. Topics usually include capitalism and industrialization, nationalism and imperialism, the clash of ideologies in the nineteenth century, and a study of the present century of total war. Based on this historical study, the prospects for the future will be explored.

23.304 American History I (3 q.h.)

America from 1763 to 1848, with attention to the development of political, economic, and social institutions in the new republic.

23.305 American History II (3 q.h.)

The United States from 1848 to 1917, with attention to the coming of the Civil War, economic development thereafter, and the Progressive Era.

23.306 American History III (3 q.h.)

The United States since 1917, an age of urbanized industrialism and international involvement and crisis.

23.309 History of Civilization A (4 q.h.)

The major ideas and institutions of civilization from ancient times to 1648. *(Not open to students who intend to receive credit for 23.301 and/or 23.302.)*

23.310 History of Civilization B (4 q.h.)

A continuation of 23.309, covering the period since 1648. *(Not open to students who intend to receive credit for 23.302 and/or 23.303.)*

23.311 American History A (4 q.h.)

America from 1763 to 1877. *(Not open to students who intend to receive credit for 23.304 and/or 23.305.)*

23.312 American History B (4 q.h.)

The United States since 1877. *(Not open to students who intend to receive credit for 23.305 and/or 23.306.)*

23.315 Women in American History (3 q.h., Group III)

A historical examination of the position and role of women in American life.

23.316 Women in European History (3 q.h., Group II)

A historical examination of the position and role of women in European life.

23.317 European Urban History to 1750 (3 q.h., Group I)

European cities from ancient times to the age of industrialization.

23.318 European Urban History since 1750

(3 q.h., Group II)

The relationship of industrialization and urbanization in Europe from the mid-eighteenth century to the present.

23.320 Population in History (3 q.h., Group I or II)

An application of the principles of demography to European history from Roman times to the present.

23.321 Ancient Middle East (3 q.h., Group I)

A study of ancient cultures and peoples in the Middle East to the rise of Islam.

23.322 Ancient Greece (3 q.h., Group I)

The origin and development of Greek civilization.

23.323 Ancient Rome (3 q.h., Group I)

Roman civilization in ancient times, with emphasis on the rise of the Republic and the decline of the Empire.

23.328 The Middle Ages (3 q.h., Group I)

The history of Europe from the fall of Rome to 1350.

23.330 Byzantine History (3 q.h., Group I)

A political and cultural history of the Eastern Christian world from the fourth century to the sacking of Constantinople in 1453.

23.331 Islamic History (3 q.h., Group IV)

The history of the Muslim Arab world from the seventh century to the end of the Abbasid Caliphate in 1258.

23.332 Ottoman History (3 q.h., Group IV)

A study of the rise, glory, decay, and attempts at reform in the Ottoman Empire from the thirteenth century to World War I.

23.333 History of the Jews I (3 q.h., Group I)

A survey of the Jews from the end of antiquity to early modern times from a cultural and intellectual perspective.

23.334 History of the Jews II (3 q.h., Group II)

The role and position of the Jews in modern history.

23.335 Modern Middle East (3 q.h., Group IV)

The Middle East since 1914 with attention to Zionism, Pan Arabism, the effects of two world wars, and the postwar settlements.

23.336 History of Eastern Europe I (3 q.h., Group I)

Prepolitical Slavic peoples on the eve of the fall of the Roman Empire; Christianity from Rome and Christianity from Constantinople and the Kingdom of Moravia; the genesis of Poland and the western Slavs and their relationship with Kievan Russia and the eastern Slavs. The decline of Bulgaria and the rise of Hungary; the Polish-Lithuanian Union of 1386 and the origin of the isolation of Russia from western Europe; the Knights of the Teutonic Order and the secularization of Prussia. The Ottoman advance into eastern Europe.

23.337 History of Eastern Europe II (3 q.h., Group II)

Stefan Bathory and papal interest in Orthodox Russia; western interference in Russia's "Time of Troubles"; Swedish invasions and the Northern War, the decline of Poland through Stanislaw Poniatowski and Czarina Catherine the Great of Russia. The partitions of Poland and Tadeusz Kosciuszko; Napoleon; revolutionary movements through 1848; Slavic romantic revolutionaries and the *fin de siecle*.

World War I and the Reconstruction of Eastern Europe. Hitler, Stalin, and World War II. The "Iron Curtain".

23.338 European Intellectual History, 1600–1815 (3 q.h., Group II)

The broad spectrum of thought and culture of the period of the scientific revolution, the Baroque, the Enlightenment, and the Age of Revolutions.

23.339 European Intellectual History since 1815 (3 q.h., Group II)

The main currents of European thought considered in their social and political context from Romanticism to the present.

23.340 Renaissance and Reformation (3 q.h., Group I)

The history of Europe from 1350 to 1648 with attention to intellectual and religious life and political and economic developments.

23.341 Europe, 1648–1789 (3 q.h., Group I)

Europe from the end of the Thirty Years' War to the French Revolution.

23.342 Europe, 1789–1870 (3 q.h., Group II)

Europe from the French Revolution to the Franco-Prussian War with a stress on the struggles for liberalism and nationalism.

23.346 Europe, 1870–1921 (3 q.h., Group II)

The background of World War I—nationalism, militarism, imperialism, the alliance system—and the making of war and peace.

23.347 Europe since 1921 (3 q.h., Group II)

Europe between the wars; World War II; the Cold War; efforts to unify the continent.

23.350 England to 1660 (3 q.h., Group I)

The Anglo-Saxons; the Norman Conquest; the rise of monarchy; religious developments.

23.351 England since 1660 (3 q.h., Group II)

England since the Restoration of the Stuarts with attention to the development of Parliament and democracy.

23.354 France since 1815 (3 q.h., Group II)

France after Napoleon with attention to continuing attempts by the French people to find satisfactory political institutions.

23.355 Germany after 1815 (3 q.h., Group II)

An analysis of the role of nationalism in German life after 1815 with emphasis on unification, militarism, and imperialism.

23.356 Italy since 1815 (3 q.h., Group II)

The unification of Italy, the attempt to establish constitutional monarchy, the rise of fascism after World War I, and the movement toward democratic republicanism after World War II.

23.357 Ireland since 1800 (3 q.h., Group II)

A study of the Irish question in British politics from the Act of Union to the present.

23.358 European Economy and Society to 1750 (3 q.h., Group I)

A topical survey of European economic and social development in the pre-industrial period.

23.359 European Economy and Society since 1750

(3 q.h., Group II)

A topical survey of European economic and social development from the beginnings of industrialization to the present.

23.360 American Indians (3 q.h., Group III)

A survey of native Americans from pre-Columbian times to the present.

23.361 Colonial America (3 q.h., Group III)

The exploration and settlement of North America; the development of political, social, and economic institutions; international rivalry to 1763.

23.363 The American Revolution (3 q.h., Group III)

British-American relations after 1763; war; and peace.

23.364 American Constitutional History I (3 q.h., Group III)

The making of the Constitution; constitutional issues from 1789 to 1900 with emphasis on federalism and government-economy matters.

23.365 American Constitutional History II (3 q.h.,

Group III)

The Constitution in the twentieth century with primary attention to the role of government in the economy and the protection of civil liberties and civil rights.

23.367 American Diplomatic History (3 q.h., Group III)

Selected topics in the history of American foreign relations and policy since 1789.

23.368 American Social History (3 q.h., Group III)

Selected topics in the life of the American people since 1789.

23.369 American Economic History (3 q.h., Group III)

Selected topics in the development of the capitalist economy in America with attention to the role of government since 1789.

23.371 American Urban History (3 q.h., Group III)

The development of urban society in the United States since 1800.

23.372 Boston to 1822 (3 q.h., Group III)

The town of Boston from its establishment in 1630; the development of political, economic, and social institutions.

23.373 Boston since 1822 (3 q.h., Group III)

The city of Boston; annexations; changes in the ethnic nature of the people.

23.374 African-American History (3 q.h., Group III)

The history of African-Americans from colonial times to the present.

23.376 The United States, 1920–1945 (3 q.h., Group III)

A topical history of the United States in time of world war, prosperity, depression, and war again.

23.378 The United States since 1945 (3 q.h., Group III)

The American people from the close of World War II to the present.

23.379 History of Sport in America (3 q.h., Group III)

A history of the major sports and their impact on American life.

23.383 Contemporary Latin America (3 q.h., Group IV)

The social, economic, and political development of the Latin American republics in the twentieth century.

23.384 The Far East to 1850 (3 q.h., Group IV)

The history of China and Japan prior to their opening by the West in the mid-nineteenth century.

23.385 China since 1850 (3 q.h., Group IV)

A century of China's history with emphasis on the western impact on Chinese civilization, China's struggle to maintain independence, and the victory of communism in the mid-twentieth century.

23.386 Japan since 1850 (3 q.h., Group IV)

An analysis of Japanese domestic developments and foreign relations since the mid-nineteenth century.

23.388 Africa to 1885 (3 q.h., Group IV)

African prehistory; the evolution of African government and society; the dynamics of Afro-European contact before 1885.

23.389 Africa since 1885 (3 q.h., Group IV)

The European impact on Africa; the rise of African nationalism; the emergence of independent African states; their relations with other nations.

23.392 India and Pakistan (3 q.h., Group IV)

The religious and political history of the peoples who formed India and Pakistan with an account of internal developments and foreign relations since independence.

23.393 Southeast Asia (3 q.h., Group IV)

The cultures of the peoples of Southeast Asia with an examination of the impact of European nations upon them and an account of their quests for national identity and economic development.

23.394 Russia to 1917 (3 q.h., Group II)

The emergence of Russia as a recognized European power; the history of the Russian people and government to the revolutions of 1917.

23.396 Russia since 1917 (3 q.h., Group II)

The revolutions of 1917 and the subsequent history of the Russian people and government with special emphasis on foreign relations.

23.397 Honors Program I (4 q.h.)

Prereq. Approval of Dean.

23.398 Honors Program II (4 q.h.)

Prereq. 23.397.

23.399 Honors Program III (4 q.h.)

Prereq. 23.398.

23.499 Field Work in History (6 q.h.)

Extra-collegiate experience in historical research or historical agencies. (Refer to page 67 for general description of field work courses). *Prereq.* Survey courses in World Civilization and American History and The Historian's Craft.

25: Social Welfare (see page 137.)**26: Philosophy and Religion**

Consultant: Prof. E. Hacker, Philosophy Dept. (L.A. College)

26.301 Introduction to Philosophy I (3 q.h.)

An examination of the aims, functions, and methods of philosophy. Questions in ethics and moral philosophy stressed in the last half of the course. *No prereq.*

26.302 Introduction to Philosophy II (3 q.h.)

Theories concerning the nature of ultimate reality, the nature of human knowledge, and the nature and existence of God. *No prereq.*

26.303 Introduction to Philosophy III (3 q.h.)

Social and/or political philosophy. Aesthetics and the philosophy of history may also be discussed. *No prereq.*

26.309 Major Thinkers of Our Time (3 q.h.)

A study of two or three philosophers, representative of which would be Austin, Ayer, Carnap, Dewey, Lewis, Maritain, Moore, Russell, or Whitehead. *Prereq.* 26.310 or equiv.

26.310 Introduction to Philosophy (Intensive) (9 q.h.)

Same as 26.301, 26.302, and 26.303.

26.314 The Human Search for Meaning (3 q.h.)

A philosophical study of the human struggle for meaning and identity. Some of the themes are: freedom and responsibility, alienation and anxiety, death and finitude. *No prereq.*

26.315 Images of Man in Philosophy (3 q.h.)

A philosophical and literary study of the nature of man. *No prereq.*

26.317 Utopias and Anti-Utopias (3 q.h.)

A study of utopian and anti-utopian literature as expressions of social criticism and as theories of social reform. A class project may be the writing of a constitution for an ideal society. *No prereq.*

26.324 The Great Eastern Religions I (3 q.h.)

The development of Eastern primitive religions and their subsequent evolution into the sophisticated forms of the contemporary Eastern religions. *No prereq.*

26.325 The Great Eastern Religions II (3 q.h.)

Study of Egyptian and Babylonian religions, Confucianism, and Taoism. *Prereq.* 26.324.

26.326 The Great Eastern Religions III (3 q.h.)

Study of Hinduism, Buddhism, and Shintoism. *Prereq.* 26.325.

26.327 The Great Western Religions I (3 q.h.)

The development of Western primitive religions and their subsequent evolution into the sophisticated forms of the contemporary Western religion. *No prereq.*

26.328 The Great Western Religions II (3 q.h.)

Study of Zoroastrianism, Judaism, and Christianity. *Prereq.* 26.327.

26.329 The Great Western Religions III (3 q.h.)

Study of the religion of Islam, contemporary religious sects, and religious phenomena. *Prereq.* 26.328.

26.331 Ethics I (3 q.h.)

Analysis and criticism of moral argument. How to recognize areas of moral agreement and disagreement. Introduction to major moral viewpoints and their application to specific situations. *No prereq.*

26.332 Ethics II (3 q.h.)

Problems and issues encountered in important areas of moral concern, such as euthanasia, punishment, and moral responsibility. Various approaches to these problems may be explained, as related to basic moral viewpoints. *Prereq.* 26.331.

26.333 Ethics III (3 q.h.)

Issues and viewpoints concerning human nature and its relevance to morality, leading to examination of such topics as victimless wrongs and the relation between morality and the law. *Prereq.* 26.332.

26.334 Introduction to Logic (formerly Logic) (3 q.h.)

Basic logical concepts are explained: deductive and inductive arguments, valid and invalid arguments, kinds and uses of definitions, etc. The student is given the opportunity to recognize and evaluate different kinds of arguments. Emphasis is usually given to the study of methods of detecting and avoiding common errors in reasoning. *No prereq.*

26.335 Ethics (Intensive) (9 q.h.)

Same as 26.331, 26.332, and 26.333.

26.344 Selected Topics in Philosophy I (3 q.h.)

Advanced course. Readings chosen jointly by students and instructor. Has included such topics as aggression, utopian literature, Marxism, and pragmatism.

26.345 Selected Topics in Philosophy II (3 q.h.)

Continuation of 26.344.

26.346 Selected Topics in Philosophy III (3 q.h.)

Continuation of 26.345.

26.351 The Existentialist Revolt (3 q.h.)

Sources of existentialism in the Western tradition with emphasis upon Kierkegaard and Nietzsche. *No prereq.*

26.352 The Existentialist Challenge (3 q.h.)

The existential view of man and his world with emphasis upon Heidegger, Sartre, and the religious existentialists—Marcel, Tillich, and Buber. *Prereq.* 26.351.

26.353 Existentialism Appraised (3 q.h.)

Contemporary assessments of the existentialist movement, its meaning, significance, and truth. *Prereq.* 26.352.

26.360 Buddhism (3 q.h.)

The principle teachings of the Buddhists. *No prereq.*

26.361 Hinduism (3 q.h.)

The major Hindu teachings. *No prereq.*

26.362 Islam (3 q.h.)

The major principles of Islam. *No prereq.*

26.363 Judaism (3 q.h.)

The elements of Judaism. *No prereq.*

26.367 Mysticism: East and West (3 q.h.)

An exploration of mystical experiences through a discussion of some representative religious mystics. *No prereq.*

26.371 Inductive Logic and Scientific Method (3 q.h.)

The study of inductive logic. Emphasis is on evaluation of generalizations, problems in "weighing the evidence" and common errors in inductive reasoning. Also studied are Mill's

methods of experimental inquiry and common errors in causal reasoning. *No prereq.*

26.372 Introduction to Symbolic Logic (3 q.h.)

An introduction to the fundamentals of propositional logic. Towards the end of the quarter the notation of the logic of quantifiers is introduced. *No prereq.*

26.373 Philosophy of Religion (replaces 26.521, 26.522, 26.523) (3 q.h.)

A study and evaluation of the arguments for the existence of God. Also studies natural and moral evil, the soul, immortality, the evidence for miracles, and the nature of religious knowledge.

26.374 Theistic, Atheistic, and Agnostic Philosophies (3 q.h.)

A comparative and evaluative study of selected theistic, atheistic, and agnostic philosophies. Some of the questions studied are: Is the belief in God necessary for a comprehensive philosophy of life? How does an atheistic philosophy explain and justify the "higher values" of man such as love, beauty, justice, etc? How is it possible to base a philosophy on the principle of agnosticism? *No prereq.*

26.375 Great Religious Thinkers (3 q.h.)

An in-depth study of three or four contrasting great religious thinkers. *No prereq.*

26.376 The Meaning of Death (3 q.h.)

Various philosophical and religious views concerning the meaning of death. Some of the questions discussed are: What attitude should one take regarding one's own finitude? What role does death play in our personal relations to others? Is a belief in an afterlife necessary in order to give meaning to this life? *No prereq.*

26.377 Philosophy of Consciousness (3 q.h.)

An exploration of the theories of consciousness and the possibility of higher states of consciousness. Readings may include some of the psychological and parapsychological literature on the subject. Also explored will be some of the techniques (meditation, etc.) that are alleged to lead to higher states of consciousness. *No prereq.*

26.378 Unorthodox Philosophies (3 q.h.)

A study of some current groups in Western culture whose philosophical and psychological teachings would be regarded as unorthodox by most experts in these areas. Some of these groups studied are: Scientology Society, International Meditation Society, Ouspensky-Gurdjieff Centers, etc. *No prereq.*

26.379 Philosophical Theories of Love (3 q.h.)

An examination and comparison of the four major philosophical-psychological theories of love in Western civilization: the Platonic, the Christian, the Romantic, and the Freudian theories. *No prereq.*

26.380 Philosophy in Literature (3 q.h.)

Analysis of basic philosophic themes expressed in such writers as: Tolstoy, Dostoevski, Thomas Mann, Sartre, Camus, Kafka, Hesse, and others. *No prereq.*

26.381 Philosophy of Art (Replaces 26.511, 26.512, 26.513) (3 q.h.)

An investigation into the nature of art and the experience of

beauty. The aesthetic theories of Plato, Aristotle, Tolstoy, Kant, Dewey, and others are critically compared. Also studied are the problems of artistic taste, standards of criticism, and the objectivity of artistic judgements. *No prereq.*

26.382 Images of Woman in Philosophy (3 q.h.)

A philosophical approach to the study of woman in society. Drawing from the sources within the history of philosophy and literature this course will include such topics as: the role of women in society (ideal and actual), love and marriage, oppression and isolation, and the cult of virginity. *No prereq.*

26.383 Philosophy of Education (3 q.h.)

A study of contrasting theories of education. Questions examined are: What should be the goal of education? Can and should cultural values be taught? What are the values of a liberal arts education in a technical society? What is an ideal curriculum for the accomplishment of a given educational goal? *No prereq.*

26.384 Philosophy of Medicine (3 q.h.)

Social and moral problems created by medical science. Questions investigated are: Should a human life be prolonged under any condition and at any cost? What are the moral problems caused by the current medical definitions of death? Is it morally right to predetermine the physical characteristics of future generations by genetic engineering? etc. *No prereq.*

26.385 Social Philosophy (replaces 26.541, 26.542, 26.543) (3 q.h.)

Critical examination of the leading socio-political ideologies in regard to their conceptions of the character, structure, and function of society. *No prereq.*

26.386 Political Philosophy: Right vs. Left (3 q.h.)

An examination of the political philosophies underlying conservatism, liberalism, and radicalism. Emphasis will be on contemporary political trends. *No prereq.*

26.387 Dialectical Materialism: The Philosophy of Marxism (3 q.h.)

A study of the philosophical aspects of Marxism. Some attention will be given to Marx's view of society, history, economics, and ethics. *No prereq.*

26.388 Philosophy of History (3 q.h.)

Emphasis will be given to the speculative philosophy of history, that is, the attempt to discover some general pattern in the history of mankind. Some of the philosophers studied are: Hegel, Marx, Spengler, and Toynbee. *No prereq.*

26.389 Philosophy of Contemporary Social Criticism (3 q.h.)

A critical study of contemporary society and its institutions. Readings may include selections from the works of Paul Goodman, Lewis Mumford, and Eric Fromm. *No prereq.*

26.390 Philosophy of the Social Sciences (3 q.h.)

An examination and evaluation of the methodologies of the social sciences: sociology, psychology, history, political science, and economics. Some of the issues examined are: prediction and explanation in the social sciences, a comparison of the methodologies of the social and physical sci-

ences, experimentation and verification in the social sciences. *No prereq.*

26.391 Philosophy of the Humanities (Intensive) (9 q.h.) Same as 26.380, 26.381, 26.314.

26.392 The Great Eastern Religions (Intensive) (9 q.h.) Same as 26.324, 26.325, 26.326.

26.393 The Great Western Religions (Intensive) (9 q.h.) Same as 26.327, 26.328, 26.329.

26.394 Social-Political (Intensive) (9 q.h.) Same as 26.385, 26.386, 26.389.

26.395 Logic (Intensive) (9 q.h.) Same as 26.343, 26.371, 26.372.

26.396 Existentialism (Intensive) (9 q.h.) Same as 26.351, 26.352, 26.353.

26.397 Philosophy of Religion (Intensive) (9 q.h.) Same as 26.373, 26.374, 26.375.

26.398 Eastern Philosophies (Intensive) (9 q.h.) Same as 26.360, 26.361, 26.362.

27: Fine Arts

Consultant: Prof. R. L. Wells, Chairman, Art Dept. (College of Arts and Sciences)

27.301 Introduction to the Arts (3 q.h.)

Introduction to the techniques and styles of various artistic expressions in painting, sculpture, drawing, architecture, and graphic arts.

27.304 History of Art I (3 q.h.)

History of Western art from prehistoric times to the end of the Roman Empire.

27.305 History of Art II (3 q.h.)

History of Western art from the end of the Roman Empire to the late sixteenth century.

27.306 History of Art III (3 q.h.)

History of Western art from the late sixteenth century to the twentieth century.

27.310 Ancient Painting and Sculpture I (3 q.h.)

A survey of art from the pre-historic period through Egypt and Mesopotamia.

27.311 Ancient Painting and Sculpture II (3 q.h.)

A survey of art from Crete through Greece and Rome.

27.312 Medieval Painting and Sculpture (3 q.h.)

Early Christian era: Byzantine, Romanesque, and Gothic Art.

27.314 European Painting (3 q.h.)

Development of painting from the late sixteenth century to the middle of the nineteenth century in Northern and Western Europe.

27.315 Modern Painting I (3 q.h.)

The development of painting from the late nineteenth century to the Surrealist movement.

27.316 Modern Painting II (3 q.h.)

The various styles of painting from Surrealism to contemporary art.

27.318 Twentieth-Century American Architecture (3 q.h.)

Study of architecture from Richardson to the present.

27.319 Twentieth-Century European Architecture (3 q.h.)

Study of architecture from Le Corbusier to the present.

27.320 Italian Renaissance Art (3 q.h.)

Study of painting and sculpture of the fifteenth and sixteenth centuries.

27.322 French Painting (3 q.h.)

Study of French painting of the nineteenth century.

27.324 American Art I (3 q.h.)

The development of American architecture, sculpture, and painting from Colonial times to the War of Independence.

27.325 American Art II (3 q.h.)

The development of American architecture, sculpture, and painting from the Revolution to the Civil War.

27.326 American Art III (3 q.h.)

The development of American architecture, sculpture, and painting from the Civil War to the present.

27.327 Life Drawing I (3 q.h.)

Basic life drawing involving anatomy and study of figure drawing. *Prereq.* 27.343 or other drawing courses on departmental approval.

27.328 Life Drawing II (3 q.h.)

Life drawing of the figure in various media. *Prereq.* 27.327.

27.329 Life Drawing III (3 q.h.)

Figure drawing and figure composition in various media. *Prereq.* 27.328.

27.330 Mixed Media I (3 q.h.)

This is a basic course in mixed media such as oil float, brayer printing, wash resist, glue resist, sponge printing, monotype, brownline prints, and sand casting. Emphasis will be on individual experimentation.

27.331 Mixed Media II (3 q.h.)

Creative expression in mixed media and experimentation.

27.332 Mixed Media III (3 q.h.)

Creative expression in advanced mixed media.

27.336 Latin American Art (3 q.h.)

Pre-Columbian and post-Columbian art forms of Latin America, including architecture, sculpture, painting, and the decorative arts—excluding Mexico.

27.338 Chinese Painting (3 q.h.)

A history of the Chinese art of painting from its inception to the twentieth century.

27.339 Japanese Art (3 q.h.)

The arts of painting, sculpture, and architecture in Japan.

27.340 Freehand Drawing (3 q.h.)

An elementary course in drawing. (*Does not fulfill drawing requirement for the studio art major.*)

27.341 Drawing I (3 q.h.)

Practice in the techniques and development of drawing in pencil, pen and ink, with concentration on basic drawing problems.

27.342 Drawing II (3 q.h.)

Practice in the techniques of wash drawing, pastel and mixed color medias.

27.343 Drawing III (3 q.h.)

Study of human anatomy and introduction to figure drawing and composition.

27.344 Graphic Arts I—Woodcutting (3 q.h.)

Creative expression in graphic art media such as woodcuts and other relief printing.

27.345 Graphic Arts II—Silkscreen (3 q.h.)

Execution of prints in various media and the printing process of silkscreen.

27.346 Graphic Arts III—Etching (3 q.h.)

Execution of intaglio printmaking with various graphic media.

27.351 Painting—Basic Level I (3 q.h.)

Practice and creative expression in the technical fundamentals of figure and landscape painting.

27.352 Painting—Basic Level II (3 q.h.)

Creative expression in advanced painting problems of figure study. *Prereq.* 27.351 or equiv.

27.353 Painting—Basic Level III (3 q.h.)

Creative expression in advanced painting problems in composition. *Prereq.* 27.352 or equiv.

27.354 Painting—Advanced Level I (3 q.h.)

Painting with concentration upon the development of personal expression and style.

27.355 Painting—Advanced Level II (3 q.h.)

Painting with concentration upon the development of personal style and the execution of various painting problems.

27.356 Painting—Advanced Level III (3 q.h.)

Development of style and experimentation with various media.

27.357 Advanced Graphic Arts I (3 q.h.)

Execution of advanced printmaking in various media. *Prereq.* 27.344, 27.346, 27.347 or other graphics courses on departmental approval.

27.358 Advanced Graphic Arts II (3 q.h.)

Printmaking in various experimental media. *Prereq.* 27.357.

27.359 Advanced Graphic Arts III (3 q.h.)

Printmaking in various media. *Prereq.* 27.358.

27.360 Oriental Indian Art (3 q.h.)

The national Indian styles of sculpture, painting, and architecture.

27.361 Basic Color and Design I (3 q.h.)

Study and practice of the principles of design and science of color.

27.362 Basic Color and Design II (3 q.h.)

Advanced study in the science of color.

27.363 Basic Color and Design III (3 q.h.)

Advanced problems in design.

27.364 Advanced Color and Design (3 q.h.)

Creative expression in various color and design problems.

27.371 Basic Commercial Design I (3 q.h.)

Study and creative work in layout, illustration, advertising, and typography.

27.372 Basic Commercial Design II (3 q.h.)

Commercial design techniques in various media.

27.373 Basic Commercial Design III (3 q.h.)

Commercial design techniques in various media.

27.374 Advanced Commercial Design (3 q.h.)

Creative problems in illustration design.

27.387 History of Photography I (3 q.h.)

Early developments in photography from ancient times to the daguerreotype.

27.388 History of Photography II (3 q.h.)

Developments of modern photography from the work of Stieglitz to the present.

27.389 History of Photography III (3 q.h.)

Study of styles in contemporary photography with emphasis on major modern photographs.

27.392 New York Art Seminar (3 q.h.)

Study and observation of the painting collections in the Metropolitan Museum of Art, Frick Collection, Museum of Modern Art, and the Guggenheim Museum.

27.394 European Art Seminar (3 q.h.)

A four-week study and travel seminar through major European art centers, with emphasis on the major works of art in each.

27.400 Honors Program I (4 q.h.)

Prereq. Approval of the Dean.

27.401 Honors Program II (4 q.h.)

Prereq. 27.400.

27.402 Honors Program III (4 q.h.)

Prereq. 27.401.

27.403 Mexican Art (3 q.h.)

Pre-Columbian art from the Archaic and Classical periods to the present.

27.405 Watercolor Painting I (3 q.h.)

Practice and creative expression in the technical fundamentals of watercolor.

27.406 Watercolor Painting II (3 q.h.)

Creative expression in various techniques of watercolor. *Prereq.* 27.405.

27.407 Watercolor Painting III (3 q.h.)

Advanced expression in watercolor. *Prereq.* 27.406.

27.408 The Arts in Boston (3 q.h.)

An examination of the arts in Boston such as painting, sculpture, and architecture consisting of lectures, discussions, tours, and field trips.

27.409 Modern Sculpture I (formerly History of Sculpture) (3 q.h.)

Twentieth century sculpture with emphasis on principle movements and artists from Brancusi to Constructivism.

27.410 Native American Indian Art (3 q.h.)

The art of the first settlers, the native people of the western hemisphere except Mexico, from the Paleolithic period to the arrival of the Conquerors. Major works of painting, architecture, sculpture, and minor arts and crafts of the northern native people and Eskimos will be studied.

27.411 Art and Society I (3 q.h.)

A topical examination of the art of the past and present, focusing on its social and cultural significance.

27.412 Modern Sculpture II (formerly History of Modern Sculpture) (3 q.h.)

The study of sculpture from Constructivism to the present.

27.413 Art and Society II (3 q.h.)

A study of the connection that exists between art and society, focusing on a few key examples of painting, sculpture, and architecture of the age of the Renaissance and Baroque.

27.414 Art and Society III (3 q.h.)

A study of the connection that exists between art and society focusing on a few key examples of painting, sculpture, and architecture of the nineteenth and twentieth centuries.

27.415 Twentieth Century Figurative Sculpture (3 q.h.)

The study of the stylistic characteristics of the twentieth-century figurative sculpture with emphasis on major sculptors of Europe and America.

28: Music

Consultant: Prof. R. L. Nadeau, Chairman, Music Dept. (College of Arts and Sciences)

28.301 Introduction to Music (3 q.h.)

Introduction to selected works of our musical heritage from earliest times to contemporary styles. Primarily a survey and listening course, with emphasis on styles, basic theory, forms, and the historical, social, and artistic periods which these works represent.

28.303 Women in Music (3 q.h.)

A study in depth of the historical role of women in music; woman as composer, performer, patron, inspiration.

28.307 Fundamentals of Music I (for non-majors) (3 q.h.)

A course for beginners who are not music majors. The development of music reading and hearing skills. Simple notation of pitch and rhythm. Scales, intervals, chords.

28.308 Fundamentals of Music II (3 q.h.)

Continuation of course 28.307. New students admitted upon examination. Dictation, part-singing and sight-singing. Beginning instrumental studies in recorder. *Prereq.* 28.307 or *equiv.*

28.309 Fundamentals of Music III (3 q.h.)

Continuation of course 28.308. New students admitted upon examination. Major, minor, and modal melodies. Seventh-chord symbols. Voice leading, cadences. Chorale analysis.

Continuation of instrumental studies on recorder. *Prereq.* 28.308 or *equiv.*

28.310 Music and Art (3 q.h.)

A general chronological study of the close relationship between music and art, comparing the musical styles of many great composers and the pictorial qualities of the master painters.

28.311 History of Musical Styles (3 q.h.)

A course for non-music majors. A survey of the historical trends in music from ancient times to the present. Men, ideas, and events which have influenced change in musical style will be highlighted. From this course, the student should gain a broad overview of musical literature and history which will enhance understanding and future concert-going.

28.317 Music as a Means of Social Expression (3 q.h.)

Deals with the artist's involvement with the recurring social themes of man's view of himself, his search for brotherhood, his relation to minority groups and his sexual relationships. Paintings and literary works are used in addition to works by Beethoven, Schoenberg, Britten, and jazz composers.

28.321 The Symphony (3 q.h.)

A study of the symphony as the major genre in the classical romantic and contemporary periods. Works by Haydn, Mozart, Beethoven, Schumann, Tchaikovsky, Brahms, Sibelius.

28.322 The Concerto (3 q.h.)

The evolution of the concerto from its origins in the Baroque period to its use in our time. Concertos for every instrument are studied, including piano, cello, violin, horn, organ and bassoon.

28.324 The World of Opera (3 q.h.)

Analysis of opera as a dramatic form. Aria, recitative, ensemble, and other basic elements of opera are isolated and discussed. Numbers Opera, Music Drama, and Singspiel are some of the types of opera considered. Composers whose works are analyzed include Mozart, Wagner, Verdi, and Puccini.

28.326 Jazz: Evolution and Essence (3 q.h.)

Jazz from its origins in New Orleans to the avant-garde experiments of today. The rhythmic, harmonic, instrumental, and stylistic characteristics of jazz are analyzed. Attention is given to the works of creative jazz artists such as Armstrong, Beiderbecke, Parker, Ellington, and Coltrane.

28.328 Ear Training I (3 q.h.)

Rhythmic articulation. Solmization studies in major keys; G and F clef. Conductor's beat patterns in simple meter. Rhythmic and melodic dictation in major keys. Interval studies.

28.329 Ear Training II (3 q.h.)

Continuation of 28.328. Solmization studies in major keys with chromatics, and in minor keys: G, F, and C clef. Conductor's beat patterns in simple and compound meter. Melodic dictation in major and minor keys. Harmonic dictation. Interval studies. *Prereq.* 28.328 or *equiv.*

28.330 Ear Training III (3 q.h.)

Continuation of 28.329. Advanced rhythmic, melodic, and

harmonic dictation. Sight singing of one- and two-part melodies in major and minor keys, with chromatics. Modulation. Singing in four parts. Advanced interval studies. *Prereq.* 28.329 or *equiv.*

28.331 Life and Works of J. S. Bach (3 q.h.)

The genius who summed up the Baroque era. A study of the man whose every note reflected his profoundly humanistic approach to religion. Works include large choral masterpieces such as the *St. Matthew Passion*, the *Brandenburg Concertos*, the *Well Tempered Clavier* and the Suites.

28.332 Life and Works of Mozart (3 q.h.)

A musical development from child prodigy to mature artist is traced from his own letters and from biographies. Many of his major works, including opera, symphonies, concertos, and chamber music are analyzed in detail.

28.333 Life and Works of Beethoven (3 q.h.)

An analysis of the complex personality and art of this major figure. His relation to the turbulent times in which he lived; his role in classical and romantic music.

28.334 Pedagogy of Music I (3 q.h.)

Introduction to philosophy principles and procedures in the teaching of music.

28.335 Pedagogy of Music II (3 q.h.)

Procedures, program planning, and techniques in teaching vocal and instrumental music. *Prereq.* 28.334 or *consent of instructor prior to registration.*

28.336 Pedagogy of Music III (3 q.h.)

Methods, procedures, and materials of/for advanced vocal and instrumental music instruction. *Prereq.* 28.334, 28.335 or *consent of instructor prior to registration.*

28.337 Conducting I (Basic Conducting) (3 q.h.)

The student is given the opportunity to learn how to develop a clear beat technique; how to prepare, teach, and polish a work in rehearsal; is exposed to a basic repertoire and the basics of vocal/instrumental production. *Prereq.* A fundamental knowledge of music reading and concurrent membership in a performing ensemble.

28.340 The Black Artist in Music (3 q.h.)

A study of the contributions of black composers and performers to the world of music.

28.341 Nationalism in Music (3 q.h.)

The relationship of folk song, dance, and art to symphonic literature; nationalistic elements in the music of Dvorak, Tchaikovsky, Grieg, Copland, Shostakovich, Sibelius; the effect of ideology on composers; the Soviet composers.

28.342 Music U.S.A. (3 q.h.)

American music from Puritan psalm singing to the present time. Folk music of ethnic origin, concert music, ragtime, jazz, and contemporary styles are discussed.

28.343 Great Choral Literature (3 q.h.)

A study of sacred and secular choral literature from medieval to contemporary times.

28.348 Great Love Songs Through the Ages (3 q.h.)

The music of love songs, ballads, chansons, lieder, and

opera arias from the Middle Ages to today will be studied, listened to, and discussed.

28.349 A History of Musical Instruments in Western Culture (3 q.h.)

A study of the evolution of musical instruments from the Middle Ages to today. General principles of instrument construction and the historical contexts of their use through the ages will be discussed. The evolution of changing tastes in instrumental sound will be illustrated through listening to recordings and, whenever possible, through live performance. Planned field trips to the Boston Museum of Fine Arts (which houses an excellent early instrument collection) and to various instrument builders in the Boston area will help give the student a firsthand view of some ancient and modern instruments.

28.351 Life and Works of Brahms (3 q.h.)

The Romantic-Classical; his technique of germinal motivic construction; a study of his symphonies, concertos, chamber music, the songs and the Requiem.

28.352 Life and Works of Chopin (3 q.h.)

A comprehensive study of the pianoforte compositions of Chopin including the sonatas, concertos, and the shorter forms such as the waltzes, nocturnes, preludes, mazurkas, etudes, scherzos, polonaises, impromptus, and ballades.

28.353 Melodrama and the Macabre: Aspects of Romanticism in Music (3 q.h.)

Program music of the Romantic period dealing with strange and macabre subjects. Works studied will include Schubert's "Erlkönig," Weber's *Der Freischütz*, and Berlioz's *Symphonie Fantastique*. Investigations will be made into the forces which produced this aspect of Romanticism with references to literature and art and how they affected the musical scene.

28.354 European Music and Art (3 q.h.)

A comparative study of how the European composers used the works of art of Spanish, English and German painters as inspiration for their individual musical scores. Analyzing many European museum paintings and their musical counterparts gives the student knowledge of the influence of the methods and works of art on the composition of these musicians.

28.355 Contemporary Opera (3 q.h.)

Almost every major composer, including Schoenberg, Berg, Bartok, Stravinsky, Hindemith, and Poulenc, has contributed to the opera repertoire, thus illustrating twentieth-century style. Among the works studied are: *Wozzeck*, *The Rake's Progress*, *Dialogue of the Carmelites*, and *Bluebeard's Castle*.

28.357 Life and Works of the Strauss Family (3 q.h.)

Studies six members of the Strauss family. Compositions studied will be waltzes, polkas, marches, and the operetta *Die Fledermaus* (*The Bat*). Cultural background in the Vienna of the 1800s will provide a broad setting for the appreciation of the music.

28.358 Life and Works of Debussy (3 q.h.)

Claude Debussy, impressionist in sound, composed music that marked the turning point toward modern trends. Much of his music for piano, orchestra and opera will be studied, in-

cluding *Pour le Piano Suite*, *Suite Bergamasque* (Clair de Lune), *Images* for piano and orchestra, *Nocturnes*, *La Mer* and the opera *Pelleas and Melisande*.

28.359 Life and Works of Verdi (3 q.h.)

The operas of Giuseppe Verdi, great composer of Italian opera, including such masterpieces as *Aida*, *Rigoletto*, *La Traviata*, *Il Trovatore*, *Othello*, and *Falstaff*.

28.360 Life and Operas of Giacomo Puccini (3 q.h.)

Tosca, *Madame Butterfly*, *La Boheme*, are a few of the operas of the Italian master to be studied in this course.

28.361 Music in Popular Culture (3 q.h.)

Investigates the attitude of American civilization towards culture, art, and beauty through a look at contemporary popular music. Compares the different styles of pop music (jazz, rock, MOR, R&B) and traces their evolution. Examines the manipulation of public tastes by large corporations for commercial purposes.

28.370 Music and Art of the Western World (3 q.h.)

Comparative study of the artists and composers of the New and Old Worlds.

28.371 Piano Class I (3 q.h.)

For beginning piano students. Each student progresses at his or her own pace and grades are achieved by passing various step levels. Ownership of a piano is not a necessary requirement for taking this course.

28.372 Piano Class II (3 q.h.)

Introduces scales, arpeggios, and triads to help students perform more advanced music. The repertoire consists of original compositions by the instructor and simple works by Bartok and Kabalevsky. *Prereq.* 28.371 or equiv., or consent of instructor.

28.373 Piano Class III (3 q.h.)

Introduces two-octave scales, arpeggios, and triads in all keys. Repertoire consists of Bartok, Kabalevsky, original compositions by the instructor, and duets specifically arranged for this course. *Prereq.* 28.372 or equiv., or consent of instructor.

28.374 Orchestral Instrument Class I (3 q.h.)

Basic problems involved in the performance of chamber music literature; intonation, rhythm, balance, and style.

28.375 Orchestral Instrument Class II (3 q.h.)

Advanced study of chamber music literature; emphasis on historical investigation and stylistic analysis.

28.376 Orchestral Instrument Class III (3 q.h.)

Performance and critical discussion of chamber music literature from all periods, culminating in an informal concert for invited guests and friends.

28.377 Voice Culture I (3 q.h.)

Blending with other voices. Elementary music reading. Singing of choral literature. Activity and performance with NU Chorus.

28.378 Voice Culture II (3 q.h.)

Intermediate reading skills. Conducting. Smaller choral en-

semble literature. Activity and performance with NU Chorus. *Prereq.* 28.377 or *equiv.*

28.379 Voice Culture III (3 q.h.)

Survey of choral literature. Activity and performance with NU Chamber Group and Chorus. *Prereq.* 28.378 or *equiv.*

28.383 Music of the Dance (3 q.h.)

The world of the dance with strong emphasis on the creative art of ballet. This course probes deeply into the dynamic qualities of music for the dance and the talented people in the field who successfully brought about its present position as a fusion of all the arts.

28.390 Directed Study (3 q.h.)

Independent work under the direction of the department upon a chosen topic. (*Limited to qualified students with approval of department chairman.*) *Prereq.* Dept. approval.

28.398 American Musical Theatre (3 q.h.)

A historical survey and analytic study of musical shows. Students will attend performances and write critical reviews.

28.399 Music Theory I—Fundamentals (3 q.h.)

Fundamentals. Pitch and rhythmic notation, scales, intervals, chord construction.

28.400 Music Theory II (3 q.h.)

Chord progression. Realization of figured bass, voice leading, harmonic rhythm. Non-harmonic tones. *Prereq.* 28.399 or *equiv.* or *consent of instructor prior to registration.*

28.401 Music Theory III (3 q.h.)

Harmonic analysis. Seventh chords, secondary dominants, modulation. *Prereq.* 28.400 or *equiv.* or *consent of instructor prior to registration.*

28.402 Music History I—Musical Literature to 1750

(3 q.h.)

A study of sacred and secular musical literature from the early Middle Ages through the Baroque. Listening to and discussion of monophony, organum, music of the troubadours and trouveres; motets, masses, and secular music by Machaut, Dufay, Josquin, Palestrina, Byrd; Elizabethan music, both vocal and instrumental; early Italian opera; music of the German Protestants culminating in the works of Bach and Handel will give the student an evolutionary view of music history and style during this period.

28.403 Music History II—Music of the Classical Period

(3 q.h.)

A study of changing musical styles from Stamitz and the Mannheim School through the works of Haydn, Mozart, and early Beethoven.

28.404 Music History III—Music of the Romantic Era

(3 q.h.)

Musical styles of the nineteenth century. The role of music and the musician in the changing social, economic, political, and cultural structure of Europe. Music by Beethoven, Schubert, Berlioz, Brahms, Verdi and Wagner will be heard, discussed, and analyzed.

28.405 Music Theory IV (3 q.h.)

Non-dominant seventh, ninth, eleventh, and thirteenth chords. Linear embellishment of harmony and harmonization

of melody. *Prereq.* 28.401 or *equiv.* or *consent of instructor prior to registration.*

28.406 Music Theory V (3 q.h.)

Analysis of appropriate period forms and compositions. Chromatic and other non-diatonic harmony. Advanced modulation. *Prereq.* 28.405 or *equiv.* or *consent of the instructor prior to registration.*

28.407 Music Theory VI (3 q.h.)

Continuing analysis of compositions and period forms. Modern chord symbols. Basic principles of serial writing. Keyboard harmony. *Prereq.* 28.406 or *equiv.* or *consent of instructor prior to registration.*

28.408 Contrapuntal Techniques (3 q.h.)

A study of polyphonic techniques. *Prereq.* 28.399 or *equiv.*

28.410 Music History IV—Music of the 20th Century

(3 q.h.)

The diversity of styles from Debussy through Stravinsky, Schoenberg, Bartok, Hindemith, and more recent developments including musique concrete, chance music, and electronic music.

28.411 Musical Performance I (1 q.h.)

Participation in rehearsals and public performances and/or research, composition, arranging, conducting, solo and ensemble activity, etc., with the NU Symphony Orchestra, the Early Music Players, the NU Chorus, the NU Bands, or other ensembles under the supervision and coaching of a faculty member of the Department of Music. The student's progress will be evaluated at the end of the quarter by audition or otherwise. *Prereq.* Audition or permission of instructor.

28.412 Musical Performance II (1 q.h.)

Prereq. Audition or permission of instructor.

28.413 Musical Performance III (1 q.h.)

Prereq. Audition or permission of instructor.

28.414 Musical Performance IV (1 q.h.)

Prereq. Audition or permission of instructor.

28.420 Music: A Listening Experience I (3 q.h.)

Designed to provide a discriminating aural appreciation of music. No previous musical knowledge is required. Each student studies at his or her own pace under supervision of the instructor. Listening for the simpler forms: strophic, sectional, multi-sectional, rondo, theme and variation forms.

28.421 Music: A Listening Experience II (3 q.h.)

(A continuation of 28.420) Listening for expanded structures: the sonata and concerto forms. *Prereq.* 28.420 or *equiv.*

28.422 Music: A Listening Experience III (3 q.h.)

(A continuation of 28.421) Listening for style and genre: music of various styles and historical periods. *Prereq.* 28.421 or *equiv.*

28.495 Honors Program I (4 q.h.)

Independent work in a selected musical area under the direction of members of the department. Limited to qualified students with the approval of the department chairman, and only by special arrangements with the supervising faculty member. *Prereq.* Permission of the Dean.

28.496 Honors Program II (4 q.h.)*Prereq.* 28.495.**28.497 Honors Program III** (4 q.h.)*Prereq.* 28.496.**29: Speech and Theatre Arts***Consultant:* Prof. E. J. Blackman, Chairman, Drama and Speech Dept. (College of Arts and Sciences)**29.301 Effective Speaking I** (3 q.h.)

Focus on development of personal communication skills; shaping messages; sending messages; listening; understanding non-verbal cues; trusting and coping with the various barriers to communication; feedback and interaction.

29.302 Effective Speaking II (3 q.h.)

The focus is on small-group communication; elements of group structure; task and maintenance functions by group members; leadership, formalized methods of group problem solving and decision making.

29.303 Effective Speaking III (3 q.h.)

The study and application of public communication skills both as disseminating information and as a catalyst for change; message preparation; information exchange; delivery; persuasive techniques are emphasized.

29.304 Voice and Articulation I (3 q.h.)

A practical course aimed at developing the speaking voice; special emphasis on articulation, pitch control, vocal variety, and flexibility; basic theory of the vocal mechanism.

29.305 Voice and Articulation II (3 q.h.)

Study of the science of speech sounds, investigation of regionalisms, individual voice development. *Prereq.* 29.304.

29.306 Oral Interpretation (3 q.h.)

Application of basic vocal techniques to the dramatic interpretation of various forms of literature.

29.307 Business and Professional Speaking (3 q.h.)

Practice in the organization and presentation of material to fit varying audiences. Emphasis on techniques of delivery and effective presentation of ideas.

29.308 Argumentation and Discussion (3 q.h.)

Designed to acquaint the student with the basic concepts of argumentation (evidence, research, refutation). Emphasis is placed on the psychology of an audience and various types of group discussion.

29.309 Parliamentary Procedure (3 q.h.)

Methods of conducting and organizing meetings. Development of effective leadership techniques. Experience in chairing a meeting and applying rules of order.

29.310 Theatre Management (3 q.h.)

A practical survey course in the business problems of financing, promoting, programming for educational, community, and professional theatre. Visits by practicing professionals; practical application through class projects working on actual productions. (A good course for those interested in business careers/arts management.)

29.311 Introduction to Theatre Arts (3 q.h.)

A course aimed at developing in theatregoers an appreciation of the total theatre experience, by studying the roles played by the artists and craftsmen of the theatre in bringing the playwright's script to life. The role of the director, actors, and designers. The role of the audience as critics.

29.315 Effective Speaking (Intensive) (6 q.h.)

Equivalent of 29.301 and 29.302, Effective Speaking I and II.

29.321 Introduction to Dramatic Literature (3 q.h.)

The relationship between drama as literature and as theatre. Types of drama: comedy, tragedy, melodrama, farce, and drawing-room comedy. The dramatist's attitude and style: Classicism, Romanticism, Realism, Naturalism, and Theatricalism.

29.322 Masters of the Theatre I (3 q.h.)

The plays in relationship to their times, the theatres in which they were performed, and the dramatic theory of the age. An examination of selected plays from the Classical Greek and Roman, Medieval religious and secular, and Elizabethan theatre.

29.323 Masters of the Theatre II (3 q.h.)

The art of the Italian *commedia dell'arte*, the Neoclassic theatre of Racine, Moliere, and Dryden, the Restoration theatre, and the plays of Goldsmith and Sheridan.

29.324 Modern European Drama (3 q.h.)

An examination of European drama of the late nineteenth century and of the twentieth century reflecting the changing views toward the nature of man and the techniques of theatre.

29.325 Modern British Drama (3 q.h.)

The drama of England and Ireland of the twentieth century reflecting the impact of modern life upon modern theatre.

29.326 Modern American Drama (3 q.h.)

A view of American drama from 1900 to the present time. The American playwright reflecting the social, philosophical, and psychological temper.

29.327 Interpersonal Communications I (3 q.h.)

Ways of becoming more aware of self and one's relation to others. An exploration of various options for communicating and increasing one's knowledge of the group process. (enrollment limited)

29.328 Interpersonal Communications II (3 q.h.)

A continuation of 29.327. *Prereq.* 29.327. (enrollment limited)

29.329 Interpersonal Communications III (3 q.h.)

A continuation of 29.328. *Prereq.* 29.328. (enrollment limited)

29.330 Female/Male Communication I (3 q.h.)

Analyzes the ways in which female/male relations are created, maintained, developed, or disintegrated through communications. The influence of family, friends, the media, and "significant others" in sustaining stereotypes for both sexes and the impact of such stereotyping on the self and effective communication. The use of verbal and nonverbal communications to understand the types of relationships be-

tween men and women, and how different male/female language styles and usage effect these relations.

29.331 Female/Male Communications II (3 q.h.)

Discusses interaction and transactional approaches to analyzing existing relations and their communication. Develops skills in diagnosing communication transactions and in developing strategies for successful or effective communication. The influence of supportive and defensive environments and the communication behaviors of each are examined and applied to strategies for improving relationships between males and females. *Prereq.* 29.330.

29.332 Female/Male Communication III (3 q.h.)

Problems and issues in male/female communication. Various settings (job or work environment, industry, health professions, education, family, legal) are used and the problems and issues of male/female interactions through communication are examined. Issues and problems from participants' own experience, as well as case studies, are included. *Prereq.* 29.330, 29.331.

29.341 Workshop for the Actor I (3 q.h.)

Physical preparation. Basic stage movement and deportment; the control of the stage voice; the analysis and establishment of characterization through observation and awareness of the body; improvisations and short scenes.

29.342 Workshop for the Actor II (3 q.h.)

Psychological preparation. The analysis and establishment of characterization through memory, emotion, imagination, and recall. Analysis of specific roles, the creation of a character analysis book, improvisations and short scenes.

29.343 Workshop for the Actor III (3 q.h.)

Preparing and performing the role. The physical and psychological preparation of specific roles. Short classroom scenes; the presentation of a one-act play.

29.350 The Comic Theatre (3 q.h.)

An examination of the writing and the staging of works by Aristophanes, Moliere, Shaw, Neil Simon. The nature, the functions, the techniques of comic writing and comic performance.

29.351 Of and By Women in the Theatre (3 q.h.)

The changing role of women as reflected in plays about and by women.

29.352 The Off-Broadway Theatre (3 q.h.)

The playwrights, the performers, and the audience of contemporary Off-Broadway theatre.

29.361 Announcing I (3 q.h.)

A course dealing with the delivery of all types of radio commercials.

29.362 Announcing II (3 q.h.)

A course dealing with the delivery of prepared as well as ad lib materials so that the announcer may strengthen his or her spontaneous broadcast speech abilities. *Prereq.* 29.361.

29.363 Announcing III (3 q.h.)

A course dealing with a variety of ad lib program types in both radio and television to aid the announcer in developing the

ability to think quickly and speak fluidly and dynamically. *Prereq.* 29.362.

29.364 Speaking Skills for International Students I (3 q.h.)

Beginning-level course designed for persons who have studied or are studying English presently. Instruction offered in pronunciation and intelligibility for formal and informal situations. Communication skills monitored through use of video and audio tape recordings and work in the language laboratory. Following diagnostic testing, students will participate in individualized, small and large group instructional situations. Placement tests will be given during the first week of class.

29.365 Speaking Skills for International Students II (3 q.h.)

Intermediate-level course designed for persons who have previously studied English, but who need to develop additional basic oral communication proficiency. Communication skills monitored through use of video tape and audio tape recordings and work in the language laboratory. Following diagnostic testing, students will participate in individualized, small and large group instructional situations. Placement tests will be given during the first week of class.

29.366 Speaking Skills for International Students III (3 q.h.)

Advanced-level course designed for students who have previously studied English and who can make themselves understood easily, but who have difficulty in purposeful oral communication. Task-oriented interaction, variety of two-person communication situations, and small group interactions. Progress monitored through use of video and audio tape recordings. Placement tests will be given during the first week of class.

29.396 New York Theatre Seminar (3 q.h.)

A seminar aimed at introducing the theatre arts to students by varied theatre-going experiences as well as formal class discussions, and studying the role of the New York stage in shaping contemporary American theatre.

29.398 Stratford Shakespeare Seminar (3 q.h.)

Seminar designed to give students an opportunity to attend four performances at the Stratford Festival Theatre; to meet with Festival actors, directors, designers; to tour the theatre plant; and to evaluate contemporary Shakespearian productions.

29.399 Creative Dramatics (3 q.h.)

Theories and methods of relating the creative techniques of pantomime, improvisations, and dramatization to work with children's programs in schools, churches, recreation facilities.

29.400 Children's Theatre (3 q.h.)

Analysis and creation of dramatic literature for children; the developing of a production for children.

30: English

Consultant: Prof. M.X. Lesser, English Dept. (College of Arts and Sciences)

Assoc. Consultant: Dean H. Vetstein

Each student enrolled in English I (30.305) will take a Placement Examination during class. Some students may be requested to register for Elements of Writing (30.304), a 3 q.h. course offering additional help in writing.

Courses required for Arts and Sciences majors are:
30.305, 30.306, 30.307 English I, II, III

A. Writing and Language

30.301 English for International Students I (non-credit)

An introduction to the grammar and rhetoric of English as a second language. Practice in listening, speaking, and writing, with selected readings and exercises for vocabulary and pronunciation.

30.302 English for International Students II (non-credit)

An intermediate course in English as a second language. Practice in preparing written and oral reports, including business and social letters. *Prereq.* 30.301 or *equiv.*

30.303 English for International Students III (non-credit)

An advanced course in English as a second language. Practice in special forms of writing to broaden diction, syntax, and organizational techniques. *Prereq.* 30.302 or *equiv.*

30.304 Elements of Writing (formerly 30.600) (3 q.h.)

An intensive review of grammatical forms and structural patterns of current English. Practice in writing sentences, paragraphs, and short papers.

30.305 English I (3 q.h.)

A detailed examination of the modes of rhetoric, especially exposition and argument. Practice in writing short papers based upon readings of expository prose.

30.306 English II (3 q.h.)

A detailed examination of the modes of rhetoric, especially description and narration. Practice in writing short papers and a fully-documented library paper based upon readings of fiction. *Prereq.* 30.305 or *equiv.*

30.307 English III (3 q.h.)

The development of techniques for understanding imaginative literature. Practice in writing short papers and a fully-documented library paper based on readings of poetry and drama. *Prereq.* 30.306 or *equiv.*

30.308 Expository Writing I (formerly 30.517, Intermediate Writing) (3 q.h.)

An intermediate course in expository prose, including the devices of classification and analogy, definition, and analysis. Practice in writing a variety of essays to discover and develop a personal style. *Prereq.* 30.307 or *equiv.*

30.309 Expository Writing II (3 q.h.)

An advanced course in expository prose, including critical and analytical reviews, articles, profiles, and sketches. Practice in writing these forms. *Prereq.* 30.308 or *equiv.*

30.310 Expository Writing III (3 q.h.)

A workshop in expository prose, emphasizing the practical problems of the writer on the job in advertising, public relations, or publishing. Practice in designing and writing special projects. *Prereq.* 30.309 or *equiv.*

30.311 Business Writing and Reports I (3 q.h.)

An introduction to the vocabulary and philosophy of business communications. Practice in the planning, writing, and analyzing of effective business letters and memoranda.

30.312 Business Writing and Reports II (3 q.h.)

Methods and principles of research and documentation of semi-technical analyses and business reports. Practice in organizing and writing complex forms of business communications. *Prereq.* 30.311 or *equiv.*

30.313 Business Writing and Reports (Intensive) (6 q.h.)

A combination of 30.311 and 30.312.

30.314 Technical Writing I (3 q.h.)

An introduction to the various types of technical documentation, memoranda, and reports. Practice in planning and writing such materials.

30.315 Technical Writing II (3 q.h.)

The preparation and development of proposals, technical manuals, and graphic aids for printed documents and presentations. Practice in writing proposals and manuals. *Prereq.* 30.314 or *equiv.*

30.316 Technical Writing III (3 q.h.)

Methods and principles of information retrieval, programmed instruction, and reproduction processes. Practice in writing and editing complex forms. *Prereq.* 30.315 or *equiv.*

30.317 Creative Writing: Fiction (formerly 30.518, Creative Writing I) (3 q.h.)

A course for beginning writers of short fiction. Practice in writing short stories in various forms; discussion and criticism of student work and selected texts.

30.318 Creative Writing: Poetry (formerly 30.519, Creative Writing II) (3 q.h.)

A course for beginning writers of poetry. Practice in writing poems in various forms and modes; discussion and criticism of student work and selected texts.

30.319 Creative Writing Workshop (formerly 30.590, Writers' Conference) (3 q.h.)

A course for the practiced writer of fiction or poetry. Discussion and criticism of student manuscripts. *Prereq.* 30.317 or 30.318 or *equiv.*

30.320 The English Language (formerly 30.525) (3 q.h.)

Development of modern English from pre-Anglo-Saxon beginnings; effects of Roman, Scandinavian, and Norman invasions; dialect geography; evolutionary change, word formation, and borrowing.

30.321 Linguistics (3 q.h.)

Theories of the nature and origin of language; review of historical and comparative linguistics; prescriptive and descriptive grammars; structural and generative-transformational phonology, morphology, and syntax.

30.322 Semantics (formerly 30.523) (3 q.h.)

The relation between language and behavior, levels of abstraction in communication, habits of evaluation of linguistic phenomena, and the modification of such habits for human understanding and survival.

30.323 Technical Writing (Intensive) (6 q.h.)

The equivalent of 30.314 and 30.315, Technical Writing I and II.

B. Literature**30.324 Gothic Fiction** (3 q.h.)

A study of horror literature and its concerns with the supernatural, the irrational, the nature of evil, and the landscape of dreams, including such novels as *Dracula*, *Dr. Jekyll and Mr. Hyde*, and *The Turn of the Screw*.

30.328 The Psychological Novel (3 q.h.)

A study of the mental and emotional processes affecting the form and style of such novels as *Crime and Punishment*, *The Metamorphosis*, and *The Stranger*.

30.329 Children's Literature (3 q.h.)

A study of the psychology of creation, the ways of the imagination, and the role of fantasy and play in such children's books as *Alice in Wonderland*, *The Wizard of Oz*, and *Charlotte's Web*.

30.331 The Ancient World (formerly Western World Literature I) (3 q.h.)

The Bible and the principal writers of Greece and Rome, including such writers as Homer, Sophocles, and Virgil.

30.332 The Middle Ages (formerly Western World Literature II) (3 q.h.)

The major works of literature between 500 A.D. and 1500 A.D., including *The Song of Roland*, *The Divine Comedy*, *The Decameron*, and *The Canterbury Tales*.

30.333 The Renaissance (formerly Western World Literature III) (3 q.h.)

The literary achievements of renaissance Europe, including such writers as Machiavelli, Rabelais, Montaigne, and Cervantes.

30.334 Neoclassicism and Romanticism (formerly Western World Literature IV) (3 q.h.)

A study of major writers from the Age of Reason to the Victorian Age, including such writers as Racine, Voltaire, Goethe, and Wordsworth.

30.335 Realism and Naturalism (formerly Western World Literature V) (3 q.h.)

The fiction and drama of the second half of the 19th century, including such writers as Flaubert, Dostoevsky, Ibsen, and James.

30.336 The Modern World (formerly Western World Literature VI) (3 q.h.)

The principal literary influences in the twentieth century, including such writers as Eliot, Joyce, Mann, Kafka, Proust, and Camus.

30.338 Modern Irish Literature (3 q.h.)

Irish literature in English from 1885 to the present, including such writers as Yeats, Joyce, O'Casey, and Behan.

30.339 Irish Writers in America (formerly The Irish Influence in Selected Modern American Literature) (3 q.h.)

A study of Irish themes and attitudes in the fiction and drama

of twentieth-century America, including such writers as O'Neill, Donleavy, Alfred, and McHale.

30.341 English Literature I (3 q.h.)

A survey of English literature from its beginnings to 1700, including works by Chaucer, Spenser, Shakespeare, Donne, and Milton.

30.342 English Literature II (3 q.h.)

A survey of English literature from the neoclassical to the romantic age, including works by Pope, Swift, Johnson, Blake, Wordsworth, and Keats.

30.343 English Literature III (3 q.h.)

A survey of English literature from the Victorian Age to the present, including works by Browning, Arnold, Hardy, Yeats, and Eliot.

30.344 American Literature I (3 q.h.)

A survey of American literature from the beginnings to the early 19th century, including works by Taylor, Edwards, Franklin, Cooper, and Poe.

30.345 American Literature II (3 q.h.)

A survey of the literature of the American Renaissance, including works by Emerson, Thoreau, Hawthorne, Melville, and Whitman.

30.346 American Literature III (3 q.h.)

A survey of American literature from the Civil War to the present, including the works of Dickinson, Twain, James, Fitzgerald, and Frost.

30.347 Science Fiction (3 q.h.)

The myths and rhetorical strategies of science fiction, including such novels as *Frankenstein*, *Childhood's End*, and *Stranger in a Strange Land*.

30.348 Images of Women in Literature (3 q.h.)

A descriptive and analytic study of the images of women and the archetypes underlying them in imaginative literature, including such writers as Homer, Austen, Ibsen, and Lawrence.

30.349 American Women Writers (formerly Images of Women in Lit. II) (3 q.h.)

A study of representative women writers in America in the 19th and 20th centuries, including such poets as Dickinson and Plath and such novelists as Chopin and Cather.

30.351 Chaucer I (3 q.h.)

An introduction to Middle English, its language and literature, with special attention to the historical, philosophical, and moral framework of *The Canterbury Tales*.

30.352 Chaucer II (3 q.h.)

A continuation of the detailed analysis of *The Canterbury Tales*.

30.353 Chaucer III (3 q.h.)

Troilus and Criseyde, *Book of the Duchess*, and other shorter works of Chaucer; a brief survey of medieval lyrics and drama.

30.354 Shakespeare I (3 q.h.)

The Elizabethan theater, Shakespeare's England, and such

pre-1600 plays as *The Comedy of Errors*, *The Merchant of Venice*, and *I Henry IV*.

30.355 Shakespeare II (3 q.h.)

The comedies at the turn of the century and the early tragedies, such as *Twelfth Night*, *Much Ado About Nothing*, and *Hamlet*.

30.356 Shakespeare III (3 q.h.)

The later tragedies and the romance, such as *Othello*, *King Lear*, *Macbeth* and *The Tempest*.

30.357 The Seventeenth Century (3 q.h.)

The prose and poetry of the major writers from 1600 to 1660, including Bacon, Browne, Donne, Herbert, Webster, and Jonson.

30.358 The Eighteenth Century I (3 q.h.)

The major writers of the Restoration and the Augustan Age, including Dryden, Congreve, Addison, Steele, Pope, and Swift.

30.359 The Eighteenth Century II (3 q.h.)

The major writers of the later part of the century, including Johnson and Boswell, Goldsmith, Sheridan, Burns, and Blake.

30.361 Spenser (3 q.h.)

The work of the major nondramatic poet of the English Renaissance, including *The Shepheardes Calendar*, the sonnet cycle, and *The Faerie Queene*.

30.362 Milton I (3 q.h.)

A study of the early poetry and prose, including *Lycidas* and *Aeropagtica*; an introduction to the epic mode of *Paradise Lost*.

30.363 Milton II (3 q.h.)

A detailed analysis of *Paradise Lost*; its sequel, *Paradise Regained*; and the dramatic poem, *Samson Agonistes*.

30.371 The Nineteenth Century I (3 q.h.)

English Romanticism from 1798 to 1832, including the poetry of Wordsworth, Coleridge, Byron, Shelley, and Keats.

30.372 The Nineteenth Century II (3 q.h.)

The prose, poetry, and drama of the Victorian Age, including such writers as Carlyle, Ruskin, Tennyson, Browning, Wilde, and Shaw.

30.373 The Twentieth Century (3 q.h.)

The major writers of the modern period, including such writers as Yeats, Eliot, Joyce, Lawrence, Auden, and Thomas.

30.374 The Eighteenth-Century English Novel (3 q.h.)

The development of the English novel and the characteristic quality of 18th-century fiction, including such writers as Defoe, Richardson, Fielding, Sterne, and Austin.

30.375 The Nineteenth-Century English Novel (3 q.h.)

The fiction of manners and morals in Victorian England, including such writers as Bronfe, Dickens, Eliot, Thackeray, and Hardy.

30.376 The Twentieth-Century English Novel (3 q.h.)

The techniques and variety of modern English fiction, includ-

ing such writers as Conrad, Foster, Joyce, Lawrence, Snow, and Murdoch.

30.378 Afro-American Literature I (3 q.h.)

A study of representative black authors from the Civil War to the Harlem Renaissance, including such writers as Chestnutt, Douglass, Toomer, and Hughes.

30.379 Afro-American Literature II (3 q.h.)

A study of representative black authors from the 1930s to the present, including such writers as Wright, Ellison, Baldwin, and Jones.

30.381 The American Short Story (3 q.h.)

The development of the American short story from its 19th-century origins to its present experiments, including such writers as Poe, Hawthorne, James, Hemingway, Roth, and Updike.

30.382 The Nineteenth-Century American Novel (3 q.h.)

The themes, forms, and techniques of the novel in 19th-century America, including such writers as Cooper, Melville, James, Twain, Howells, and Crane.

30.383 The Twentieth-Century American Novel (3 q.h.)

The themes, forms, and techniques of the novel in 20th-century America, including such writers as Dreiser, Lewis, Fitzgerald, Faulkner, Ellison, and Bellow.

30.384 Contemporary American Poetry (3 q.h.)

A study of the structure and themes of poetry in post-1945 America, including such writers as Ginsberg, Plath, Snodgrass, and Wilbur.

30.385 The Contemporary Novel (formerly The Modern European Novel) (3 q.h.)

A study of the structure and themes of post-1945 American, British, and European novels by such writers as Barth, Hawkes, Lessing, Powell, Grass and Solzhenitsyn.

30.387 Contemporary English Poetry (3 q.h.)

A study of the structure and themes of poetry in post-1945 England, including the work of Gunn, Hughes, Larkin, and Levertov.

30.391 Honors Program I (4 q.h.) See p. 66.

30.392 Honors Program II (4 q.h.)

Prereq. 30.391.

30.393 Honors Program III (4 q.h.)

Prereq. 30.392.

31-34: Modern Languages

Consultant: Prof. Holbrook Robinson, Chairman, Modern Language Dept. (College of Arts and Sciences)

31: French

31.401 Elementary French I (4 q.h.)

Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

31.402 Elementary French II (4 q.h.)

Continuation of grammar study. Oral and written exercises. *Prereq.* 31.401 or equiv.

31.403 Elementary French III (4 q.h.)

Reading of French prose of increasing difficulty, with written and oral exercises based on the materials read; practice in conversation. *Prereq.* 31.402 or *equiv.*

31.404 Intermediate French I (4 q.h.)

A review of grammar, with practice in composition and conversation. *Prereq.* 31.403 or *equiv.*

31.405 Intermediate French II (4 q.h.)

History of French civilization, with discussions and conversation. *Prereq.* 31.404 or *equiv.*

31.406 Intermediate French III (4 q.h.)

Intensive reading of modern French prose, with conversational practice. *Prereq.* 31.405 or *equiv.*

31.407 Elementary French (Intensive) (12 q.h.)

Stresses the essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary with idiomatic expressions. Written and oral exercises are based upon simple French prose. Develops into the reading of more difficult work accompanied by practice in conversation. (*Not open to students who have taken 31.401, 31.402, 31.403.*)

31.408 Intermediate French (Intensive) (12 q.h.)

Same as 31.404, 31.405, and 31.406. (*Not open to students who have taken 31.404, 31.405 and 31.406.*)

31.421 French Literature I (3 q.h.)

Origins of French literature with readings from major works of the Middle Ages. *Prereq.* 31.406 or *equiv.*

31.422 French Literature II (3 q.h.)

Selections from the Classical period in the seventeenth and eighteenth centuries. *Prereq.* 31.421 or *equiv.*

31.423 French Literature III (3 q.h.)

Readings from major works of the nineteenth and twentieth centuries. *Prereq.* 31.422 or *equiv.*

32: Spanish**32.401 Elementary Spanish I** (4 q.h.)

Essentials of grammar, practice in pronunciation, progressive acquisition of a basic vocabulary and idiomatic expressions.

32.402 Elementary Spanish II (4 q.h.)

Continuation of grammar study. Oral and written exercises; reading of Spanish prose of moderate difficulty. *Prereq.* 32.401 or *equiv.*

32.403 Elementary Spanish III (4 q.h.)

Continuation of grammar study. Oral and written exercises; reading of Spanish prose of moderate difficulty. *Prereq.* 32.402 or *equiv.*

32.404 Intermediate Spanish I (4 q.h.)

Review of grammar, with practice in composition and conversation. *Prereq.* 32.403, 32.411 or *equiv.*

32.405 Intermediate Spanish II (4 q.h.)

Spanish civilization through texts of average difficulty. Intensive reading of modern prose, with occasional oral or written translation; conversation practice based on assigned readings. *Prereq.* 32.404 or *equiv.*

32.406 Intermediate Spanish III (4 q.h.)

Spanish-American civilization through texts of average difficulty. Intensive reading of modern prose, with occasional oral or written translation; conversation practice based on assigned readings. *Prereq.* 32.405 or *equiv.*

32.407 Elementary Spanish (Intensive) (12 q.h.)

Stresses the essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary with idiomatic expressions. Written and oral exercises are based upon simple Spanish prose. Develops into the reading of more difficult work accompanied by practice in conversation. (*Not open to students who have taken 32.401, 32.402, 32.403.*)

32.408 Intermediate Spanish (Intensive) (12 q.h.)

Same as 32.404, 32.405 and 32.406. (*Not open to students who have had 32.404, 32.405, and 32.406.*)

32.409 Conversational Spanish I (4 q.h.)

Will satisfy the elementary language requirement only. This course is intended to provide students with a basic speaking ability and understanding of everyday Spanish. (*No previous background needed.*)

32.410 Conversational Spanish II (4 q.h.)

Will satisfy the elementary language requirement only. Continued building of basic skills in conversational Spanish. *Prereq.* 32.409 or *equiv.*

32.411 Conversational Spanish III (4 q.h.)

Will satisfy the elementary language requirement only. A continuation of 32.410. *Prereq.* 32.410 or *equiv.*

33: German**33.401 Elementary German I** (4 q.h.)

Essentials of grammar; practice in pronunciation; progressive acquisition of a basic vocabulary and idiomatic expressions.

33.402 Elementary German II (4 q.h.)

More difficult points of grammar—particularly uses of subjunctive mood. *Prereq.* 33.401 or *equiv.*

33.403 Elementary German III (4 q.h.)

Reading of simple German prose, with oral and written exercises based on material read; German conversation encouraged. *Prereq.* 33.402 or *equiv.*

33.404 Intermediate German I (4 q.h.)

A review of grammar, with practice in composition and conversation. *Prereq.* 33.403 or *equiv.*

33.405 Intermediate German II (4 q.h.)

History of German civilization, with discussions and conversation. *Prereq.* 33.404 or *equiv.*

33.406 Intermediate German III (4 q.h.)

Intensive reading of modern German prose, with conversational practice. *Prereq.* 33.405 or *equiv.*

34: Italian**34.431 Elementary Italian I** (4 q.h.)

Essentials of grammar; practice in pronunciation; and progressive acquisition of a basic vocabulary and idiomatic expressions.

34.432 Elementary Italian II (4 q.h.)

Continuation of grammar study. Oral and written exercises. *Prereq.* 34.431 or equiv.

34.433 Elementary Italian III (4 q.h.)

Reading of Italian prose with increasing difficulty; with written and oral exercises based on the material read; practice in conversation. *Prereq.* 34.432 or equiv.

34.434 Intermediate Italian I (4 q.h.)

A review of grammar, with practice in composition and conversation. *Prereq.* 34.433 or equiv.

34.435 Intermediate Italian II (4 q.h.)

History of Italian civilization with discussions and conversation. *Prereq.* 34.434 or equiv.

34.436 Intermediate Italian III (4 q.h.)

Intensive reading of modern Italian prose, with conversational practice. *Prereq.* 34.435 or equiv.

38: Journalism

Consultant: Prof. G. A. Speers, Chairman, Journalism Dept. (College of Arts and Sciences)

38.304 Newswriting I (3 q.h.)

Obtaining and organizing facts; the writing of basic news stories. Subjects covered may include the five "W's" and the "H" of news, inverted pyramid form, news values, and leads.

38.305 Newswriting II (3 q.h.)

Analysis of different types of news stories through assignments and class discussions; building news stories; news interview stories, and other types. *Prereq.* 38.304 or equiv.

38.306 Newswriting III (3 q.h.)

Investigative reporting, feature stories, editorials. Copyediting exercises and assignments in specialized writing. Libel, slander, and other legal matters affecting journalism. *Prereq.* 38.305 or equiv.

38.310 Mass Media and Public Relations Writing I (3 q.h.)

Techniques of journalism, stressing actual assignments and classroom discussion of students' work. Course applies basic writing practices to assignments. *Prereq.* 38.306 or equiv.

38.311 Mass Media and Public Relations Writing II (3 q.h.)

Focus on handling stories that emanate from various "beats," including companies, organizations, and in-depth writing and reporting. *Prereq.* 38.310 or equiv.

38.312 Mass Media and Public Relations Writing III (3 q.h.)

Concentration on fields of "specialties" of business, sports, entertainment, editorials, and student development of a special project in journalism. *Prereq.* 38.311 or equiv.

38.320 Photo Journalism (3 q.h.)

Covers the basics of how to tell a story with a camera. Elementary darkroom procedures are covered, including cropping, assignment techniques, classroom theory, and photo caption methods. Class size is limited.

39: Economics

Consultant: Prof. M. A. Horowitz, Chairman, Economics Dept. (College of Arts and Sciences)

Associate Consultant: Prof. H. Goldstein (College of Arts and Sciences)

39.301 Economic Principles and Problems I (3 q.h.)

Development of macroeconomic analysis; review of national income concepts; national income determination, fluctuation, and growth; role of the banking system and the Federal Reserve System; government expenditures and taxation; international trade; balance of international payments.

39.302 Economic Principles and Problems II (3 q.h.)

The role of a market pricing system, demand and supply, in determining the allocation of resources to competing uses and why this system may not function adequately in certain areas. Application of economic principles to private and public problems in such areas as pollution, poverty, and racial discrimination. *Prereq.* 39.301 or equiv.

39.303 Economic Principles and Problems III (3 q.h.)

Applications of economic principles to selected problem areas: poverty, competition, labor, agriculture, urban. *Prereq.* 39.302 or equiv.

39.304 Economics (Intensive) (9 q.h.)

Combination of Economic Principles and Problems I, II, and III. (Not open to students who have taken 39.301, 39.302, 39.303).

39.311 Statistics I (3 q.h.)

Introduction to the collection and organization of data. Concentration on the nature, computation, and uses of measures of central tendency and variability.

39.312 Statistics II (3 q.h.)

Introduction to statistical inference, parameters of samples, tests of significance, "t" distribution, and chi square. *Prereq.* 39.311 or equiv.

39.313 Statistics III (3 q.h.)

Introduction to the analysis of variance, trend fitting, linear regression, seasonal adjustment, and index numbers. *Prereq.* 39.312 or equiv.

39.314 Statistics (Intensive) (9 q.h.)

Introduction to the collection and organization of data. Concentration on the nature, computation, and uses of measures of central tendency and variability. Introduction to statistical inference, parameters of samples, tests of significance, "t" distribution, and chi square. Introduction to the analysis of variance, trend fitting, linear regression, seasonal adjustment, and index numbers. *Not open to students who have taken 39.311, 39.312, 39.313.*

39.317 Money and Banking I (3 q.h.)

Introduction to money and credit, commercial banking structure, and money creation; problems and policy of central banking in the United States. *Prereq.* 39.303 or equiv.

39.318 Money and Banking II (3 q.h.)

Theory of money and prices and monetary policy; interest theory, debt management, and international monetary problems and analysis. *Prereq.* 39.317 or equiv.

39.319 Government Finance (formerly Public Finance) (3 q.h.)

Fiscal functions, institutions, and politics; growth of the public

sector; expenditure planning in theory and practice; cost-benefit analysis; principles of taxation and tax incidence; major taxes at Federal and state-local levels; fiscal policy for high employment, price stability, and growth; current fiscal problems such as tax reform, urban fiscal problems, fiscal federalism, and income maintenance programs. *Prereq.* 39.318 or *equiv.*

39.321 Economic Growth and Development I (3 q.h.)

Analysis of the development of the western market system. Introduction to economic growth and alternative approaches to economic development.

39.322 Economic Growth and Development II (3 q.h.)

An introductory analysis of economic factors and institutions as well as an examination of the effect of psychological, social, and political influences upon economic development.

39.323 Government and Business I (3 q.h.)

Role of government in national economic affairs— theory and practice.

39.324 Government and Business II (3 q.h.)

The relationship between government and business and anti-trust laws.

39.325 American Economic History (3 q.h.)

Economic development of the United States with emphasis upon the post-Civil War period and selected European developments.

39.326 Government and Business III (3 q.h.)

Application of anti-trust laws to business—emphasis on cases, principles, and current anti-trust problems.

39.327 Labor Economics (3 q.h.)

Development of labor organizations, their aims and methods. Issues in collective bargaining and public policy toward labor. *Prereq.* 39.303 or *equiv.*

39.331 Business Cycles I (3 q.h.)

Intermediate macro-economic theory. Theory of cyclical fluctuations in the context of multiplier and accelerator models. *Prereq.* 39.303 or *equiv.*

39.332 Business Cycles II (3 q.h.)

Business cycle analysis, measurement, and public policy. *Prereq.* 39.331 or *equiv.*

39.333 Business Cycles III (3 q.h.)

Business cycle forecasting methods and services. *Prereq.* 39.332 or *equiv.*

39.339 Managerial Economics (3 q.h.)

An application of the theory of demand, price, and output to the business firm and capital budgeting. *Prereq.* 39.303 or *equiv.*

39.341 Medical Economics (3 q.h.)

Examination and discussion of the following topics: health care trends in the United States; causes for increases in medical care costs; supply and training of health care personnel; the nation's need for physicians, nurses, pharmacists and other allied health personnel; the quality of medical care; economics of health insurance plans; consumer demand for

health care, medical facilities, professional personnel, and semi-professional personnel.

39.342 Economics of Crime (3 q.h.)

Theoretical and empirical analysis of the economic causes of criminal behavior will be presented. The social costs of crime and its prevention will be covered, and techniques for designing optimum law enforcement policies will be developed.

39.343 Poverty and Discrimination (3 q.h.)

Analysis of trend and composition of poverty in America. Examination of labor market, demographic and institutional forces contributing to poverty; role of education; economics of race and sex discrimination; public welfare system and proposed reforms.

39.352 Economics of World Energy and Primary Resources (3 q.h.)

Investigates economic, political, and historical backgrounds of the energy and other resource problems. Future impact of primary resources limitations on U.S. and world economics will be analyzed. Feasibility studies of resource substitution.

39.353 Superpower Economics (3 q.h.)

Analyzes the relative economic structure and strength of the U.S., U.S.S.R., Japan, and the Common Market and China, as well as the economic relations among these powers. Also may examine the impact of these relations on the domestic economies of the superpowers and of the developing nations of the world.

39.354 Economics of Urban Transportation (3 q.h.)

Transportation and land-use patterns; externalities; social costs and social benefits of various modes of urban transportation; ownership, regulations, and financing of various modes of transportation; economies of new technology in urban transportation.

39.355 Economics of the Quality of Urban Environment and Control (3 q.h.)

Economic analysis of air, water, thermal, and noise pollution; the utilization of urban space and other urban resources, identification of possible economic effects of urban environment, such as crime, delinquency, immobility, and congestion.

39.357 Manpower and Anti-Poverty Policies and Programs (3 q.h.)

Assessment of government and private efforts to fight poverty and improve the labor market position of impoverished groups; relationship between causes of poverty and discrimination; and possible remedies. Manpower training programs, negative income tax, family allowances, and other income maintenance schemes.

39.361 Urban Economics (3 q.h.)

An inquiry into the causes of the location and the growth of urban centers; economic analysis of selected urban problems, such as housing, transportation, land use, and public services. Exploration of public policies related to such problems.

39.391 Honors Program I (4 q.h.)

Prereq. Approval of Dean.

39.392 Honors Program II (4 q.h.)*Prereq.* 39.391.**39.393 Honors Program III** (4 q.h.)*Prereq.* 39.392.**40: Library Science***Consultant:* Mr. Frank Seegraber, Boston College**40.301 Introduction to Library Science** (3 q.h.)

Brief survey of the history of books and librarianship. The development of libraries in the United States with some emphasis on recent federal and state library legislation. The library profession, its philosophy, publications, and organizations.

40.302 Selection of Library Materials (3 q.h.)

Principles and practices in the selection of materials for the modern library; bibliographic aids to selection; practice in preparation of book notes and book reviews.

40.311 Organization of the Library (3 q.h.)

The organization, administration, and services of municipal libraries; public library systems in the United States; the role of public libraries as educational institutions.

40.312 Multi-Media Centers (3 q.h.)

Organization and management of elementary and secondary school libraries; problems in the selection and evaluation of multi-media materials necessary to the school curriculum.

40.313 Administration of Multi-Media Centers (3 q.h.)

The library as a media center for instructional materials; problems in personnel and budgeting; the library's role in the school curriculum and its services to students and faculty.

40.314 Multi-Media Materials and Services (3 q.h.)

The selection, organization, and use of multi-media materials in school libraries; types of library equipment and services; cataloging of school library materials.

40.321 Introduction to Reference Materials and Methods (3 q.h.)

The basic tools and methods for locating information. Evaluation of dictionaries, encyclopedias, gazetteers and atlases, handbooks, almanacs, directories, and indexes.

40.322 Reference Work in the Social Sciences (3 q.h.)

Scope and use of outstanding reference materials, including government publications, in the broad range of the social sciences: economics, education, political science, sociology, and allied fields. *Prereq.* 40.321 or *equiv.*

40.323 Reference Work in the Humanities (3 q.h.)

Approaches to the solution of reference problems in the humanities, with special emphasis on literature. *Prereq.* 40.321 or *equiv.*

40.326 Library Community Relations (3 q.h.)

An exploration of creative approaches and practical techniques for reaching individuals and groups with dynamic library science. Emphasis on modern public relations methods and media.

40.331 Descriptive Cataloging (3 q.h.)

Theory and practice of descriptive cataloging, introducing techniques of compiling author, corporate, and serial entries.

40.332 Subject Headings and Classification (3 q.h.)

Introduction to Dewey Decimal Classification and Sears subject headings; further study of descriptive cataloging in book and non-book materials. *Prereq.* 40.331 or *equiv.*

40.333 Library of Congress Classification (3 q.h.)

The significant differences between LC and Dewey. Notes on original cataloging and techniques of classification within the LC scheme. Exercises in the use of LC schedules and subject headings. *Prereq.* 40.331 or *equiv.*

40.341 Children's Library Materials: An Evaluation (3 q.h.)

The history of children's literature; current trends in its publication and social forces that influence its production; criteria for evaluation and aids for selection of types of children's books.

40.342 Library Service to Young People (3 q.h.)

Study of adolescent needs in the field of literature with application to both public and school libraries; special attention to the problem of material selection, book talks, and discussion groups.

Arts and Sciences Intensive Courses**16.304 Earth Sciences (Intensive)** (9 q.h.)

A composite of 16.301, 16.302, and 16.303, as a one-quarter course.

19.307 Psychology (Intensive) (9 q.h.)

An introductory survey of the historical backgrounds of psychology, psychological measurements and testing, and principles of animal and human learning. Principles of sensory processing, perception, motivation and emotion, and social influences on behavior. Personality theory and measurements, behavior disorders, mental health, and psychotherapy. (Not open to students who have taken 19.301, 19.302, 19.303.)

19.344 Abnormal Psychology (Intensive) (9 q.h.)

Same as 19.341, 19.342, 19.343. *Prereq.* 19.303 or *equiv.*

20.304 Anthropology (Intensive) (9 q.h.)

Same as 20.301, 20.302, and 20.303.

21.304 Sociology (Intensive) (9 q.h.)

Basic concepts and theories relating to the study of humans as participants in group life. Examines social structure, culture, socialization, the family, primary groups, associations, social stratification, collective behavior, population, and problems of social, political, urban, and industrial change. Term papers or essays may be required. (Not open to students who have taken 21.301, 21.302, 21.303.)

21.417 Social Theory I (Intensive) (4 q.h.)

A historical survey of sociological theorists, including the work of de Tocqueville, Comte, Marx, Durkheim, Cooley, Weber, Simmel and others. *Prereq.* *Consent of the instructor* or 12 q.h. in *sociology-anthropology*. (Not open to students who have credit for 21.317, 21.318, or 21.319.)

21.418 Social Theory II (Intensive) (4 q.h.)

A study of the major theoretical issues in sociology. Discus-

sion concentrates on systematic questions and topics, but material is drawn from theorists such as Mannheim, Merton, Parsons. Students may be required to present papers in class on questions of theoretical interest: e.g. the problem of order, the problem of change, the role of the individual in change, etc. *Prereq.* 21.417 or equiv. (*Not open to students who have credit for 21.317, 21.318, or 21.319.*)

22.304 Principles of Political Science (Intensive) (9 q.h.)

Evolution of the nation-state. Analysis of basic political concepts. Study of basic forms of the contemporary political system. Analysis of constitutional and totalitarian models. Study of contemporary British and Soviet political systems. The American political system including study of Civil Rights. International politics and American foreign policy since 1945. (*Not open to students who have taken 22.301, 22.302, 22.303, or equiv.*)

22.321 Public Administration (Intensive) (6 q.h.)

Same as 22.316 and 22.317.

22.329 Comparative Politics (Intensive) (4 q.h.)

A comparative analysis of political culture, organization and behavior in different national settings.

26.310 Introduction to Philosophy (Intensive) (9 q.h.)

Same as 26.301, 26.302, and 26.303.

26.335 Ethics (Intensive) (9 q.h.)

Same as 26.331, 26.332, and 26.333.

26.391 Philosophy of the Humanities (Intensive) (9 q.h.)

Same as 26.380, 26.381, and 26.314.

26.392 The Great Eastern Religions (Intensive) (9 q.h.)

Same as 26.324, 26.325, 26.326.

26.393 The Great Western Religions (Intensive) (9 q.h.)

Same as 26.327, 26.328, 26.329.

26.394 Social-Political (Intensive) (9 q.h.)

Same as 26.385, 26.386, 26.389.

26.395 Logic (Intensive) (9 q.h.)

Same as 26.334, 26.371, 26.372.

26.396 Existentialism (Intensive) (9 q.h.)

Same as 26.351, 26.352, 26.353.

26.397 Philosophy of Religion (Intensive) (9 q.h.)

Same as 26.373, 26.374, 26.375.

26.398 Eastern Philosophies (Intensive) (9 q.h.)

Same as 26.360, 26.361, 26.362.

29.315 Effective Speaking (Intensive) (6 q.h.)

Equivalent of 29.301 and 29.302, Effective Speaking I and II.

30.313 Business Writing and Reports (Intensive) (6 q.h.)

A combination of 30.311 and 30.312.

30.323 Technical Writing (Intensive) (6 q.h.)

The equivalent of 30.314 and 30.315, Technical Writing I and II.

31.407 Elementary French (Intensive) (12 q.h.)

Stresses the essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary with idiomatic expressions. Written and oral exercises are based

upon simple French prose. Develops into the reading of more difficult work accompanied by practice in conversation. (*Not open to students who have taken 31.401, 31.402, 31.403.*)

31.408 Intermediate French (Intensive) (12 q.h.)

Same as 31.404, 31.405, and 31.406. (*Not open to students who have taken 31.404, 31.405 and 31.406.*)

32.407 Elementary Spanish (Intensive) (12 q.h.)

Stresses the essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary with idiomatic expressions. Written and oral exercises are based upon simple Spanish prose. Develops into the reading of more difficult work accompanied by practice in conversation. (*Not open to students who have taken 32.401, 32.402, 32.403.*)

32.408 Intermediate Spanish (Intensive) (12 q.h.)

Same as 32.404, 32.405, and 32.406. (*Not open to students who have had 32.404, 32.405, and 32.406.*)

39.304 Economics (Intensive) (9 q.h.)

Combination of Economic Principles and Problems I, II, and III. (*Not open to students who have taken 39.301, 39.302, 39.303.*)

39.314 Statistics (Intensive) (9 q.h.)

Introduction to the collection and organization of data. Concentration on the nature, computation, and uses of measures of central tendency and variability. Introduction to statistical inference, parameters of samples, tests of significance, "t" distribution, and chi square. Introduction to the analysis of variance, trend fitting, linear regression, seasonal adjustment, and index numbers. Not open to students who have taken 39.311, 39.312, 39.313. *Prereq.* 39.303 or equiv.

Business Administration

41: Accounting

Consultant: Prof. J. W. Golemme (College of Business Admin.) 437-3244

Associate Consultant (Upper Level Courses): Prof. Paul A. Janell (College of Business Admin.) 437-3241

Associate Consultant (Accounting Principles): Dean Walter E. Kearney, Jr. (Northeastern University) 437-2312

41.301 Accounting Principles I (3 q.h.)

The basic concepts and methodology of accounting for service and merchandising businesses, and accounting for business assets.

41.302 Accounting Principles II (3 q.h.)

Emphasizes financial reporting, income measurement, valuation and appraising the financial results of business operations. *Prereq.* 41.301.

41.303 Accounting Principles III (3 q.h.)

A study of various functional accounting topics including payroll, special journals, voucher system, forecasting, job order, process and standard cost systems, capital budgeting, decision-making, statement analysis, and department and branch accounting.

41.304 Accounting Principles (Intensive) (6 q.h.)

Same as Accounting Principles I and II.

41.307 Accounting for Management Decisions I (3 q.h.)

(For non-accounting majors.) The preparation and interpretation of financial statements, including cash and funds flow, for internal use by the company. *Prereq.* 41.302.

41.308 Accounting for Management Decisions II (3 q.h.)

(For non-accounting majors.) The preparation and interpretation of cost accounting information and the utilization of this information in the managerial decision-making process. *Prereq.* 41.307.

41.309 Accounting for Management Decisions (Intensive) (6 q.h.)

Same as Accounting for Management Decisions I and II. *Prereq.* 41.302.

41.310 Management Accounting for Nonprofit Organizations (3 q.h.)

An examination of the characteristics of management control in nonprofit organizations. A study of input-output measures, pricing, budgeting, and accounting controls. (For non-accounting majors)

41.401 Intermediate Accounting I (3 q.h.)

A comprehensive examination of the accounting process and the financial statements generated by that process. The focus is on current assets. Specific topics include cash, receivables, investments in marketable securities and inventories. *Prereq.* 41.302.

41.402 Intermediate Accounting II (3 q.h.)

A continuation of Intermediate Accounting I. A detailed examination of current liabilities, fixed assets including depreciation, intangible assets, and stockholder equity accounts. *Prereq.* 41.401.

41.403 Intermediate Accounting III (3 q.h.)

A comprehensive examination of some specialized problem areas relating to the preparation and interpretation of financial statements. Topics may include earnings per share, pensions and leases, income tax allocation, accounting changes, bonds payable, and long-term investments. *Prereq.* 41.402.

41.404 Intermediate Accounting (Intensive) (6 q.h.)

Same as Intermediate Accounting I and II. *Prereq.* 41.302.

41.405 Cost Accounting I (3 q.h.)

The foundations of cost accounting, including terminology, purpose, and relationship with financial accounting; familiarization with product costing systems and their usefulness. *Prereq.* 41.302.

41.406 Cost Accounting II (3 q.h.)

Budgetary planning and control with the emphasis on the use of cost data for current operations, special decisions, and long-range planning. *Prereq.* 41.405.

41.407 Advanced Accounting I (3 q.h.)

An in-depth analysis of specialized problem areas in accounting. Topics may include price-level accounting, accounting for partnerships, accounting for branches, segmental reports, interim statements, and forecasts. *Prereq.* 41.403.

41.408 Advanced Accounting II (3 q.h.)

A comprehensive examination of the problems associated with business combinations. A study of the purchase and pooling methods of consolidations, including an examination of financial reporting by multinational corporations. *Prereq.* 41.407.

41.409 Advanced Accounting III (3 q.h.)

A study of the accounting problems associated with bankruptcy and corporate reorganization, estates and trusts, and some special problems related to installment sales and consignments. A detailed examination of accounting for "Not-for-Profit Entities." *Prereq.* 41.408.

41.410 Seminar in Contemporary Accounting Problems I (3 q.h.)

The careful examination of the underlying concepts and conventions of accounting and their application to financial statements. An in-depth analysis of the areas of revenue and income recognition. *Prereq.* 41.403 and 41.406.

41.411 Seminar in Contemporary Accounting Problems II (3 q.h.)

The examination of cost determination and allocation and depreciation. An in-depth study of specialized areas including such topics as pensions, leases, stock options, and business combinations. *Prereq.* 41.410.

41.412 Auditing I (3 q.h.)

The examination of auditing requirements relative to the professional ethics and legal responsibility of the certified public accountant. A study of the use of the computer in auditing and the utilization of statistical sampling techniques. *Prereq.* 41.403.

41.413 Auditing II (3 q.h.)

The methods and approach utilized in auditing aspects, liabilities, owners equity, and nominal accounts of the firm. *Prereq.* 41.412.

41.414 Auditing (Intensive) (6 q.h.)

Same as Auditing I and II. *Prereq.* 41.403.

41.415 Federal Income Taxes I (3 q.h.)

The application of the Federal Tax Law to the individual's income, gains, losses, and expenses. A study of the individual's special deductions. *Prereq.* 41.403.

41.416 Federal Income Taxes II (3 q.h.)

A study of some specialized tax problems related to the individual. Topics include installment sales and income averaging. A study of the application of the Federal Tax Law to the corporation. *Prereq.* 41.415.

41.417 Internal Auditing I (3 q.h.)

Designed to aid in understanding how a modern internal audit function undertakes to review and appraise diverse operations. Studies the audit organization, selection and development of staff, preparation of long-range programs, performing preliminary surveys, and developing audit programs. Techniques of internal audit appraisal are examined. Topics may include regression analysis and statistical sampling. Case studies may be employed. *Prereq.* None.

41.418 Internal Auditing II (3 q.h.)

Continuation of the study of techniques of internal audit ap-

praisal. Topics may include computers as an audit tool, auditor responsibilities, audit work papers, reports, reviews, replies, and management summaries. Case studies are employed. *Prereq.* 41.417.

41.419 Tax Factors in Business Decisions (3 q.h.)

An overview of federal income tax provisions that impact on business and investment decisions. Emphasizes the rationale of tax provisions and stresses the tax planning responses. (Not open to accounting majors.). *Prereq.* 41.302.

41.420 Essentials of Personal Income Taxation (3 q.h.)

A special course designed for those students who are not majoring in accounting. The course is designed to teach important aspects of personal income taxation on both the federal and state level. Tax law, tax planning, and the preparation of individual tax returns are emphasized.

41.421 Cost Accounting (Intensive) (6 q.h.)

Same as 41.405 and 41.406. *Prereq.* 41.302.

43: Marketing

Consultant: Prof. Dan T. Dunn, Jr. (College of Business Administration) 437-3261

Associate Consultant: Mr. G. P. Foster, 749-1599

Coordinator: Mr. George S. Hennessy, 696-8531

43.301 Introduction to Marketing I (3 q.h.)

Focuses on the role of marketing in contemporary economic society, in the business enterprise, and in nonprofit organizations such as hospitals and government agencies. Consideration is given to the planning, operation, and evaluation of marketing and promotional efforts necessary to the effective marketing of consumer and industrial products and services in both profit and nonprofit organizations. Students taking this course are strongly urged to continue instruction by also taking Introduction to Marketing II, 43.302 (see below).

43.302 Introduction to Marketing II (3 q.h.)

Continuation of Marketing I with emphasis on pricing, distribution channels, product planning, packaging, branding, physical distribution, advertising, sales promotion and sales force management leading to the development of overall marketing strategies. Case studies of actual marketing problems are used. This course is a prerequisite for many other marketing courses. *Prereq.* 43.301.

43.303 Introduction to Marketing (Intensive) (6 q.h.)

One-quarter course covering the material in Introduction to Marketing I and II, 43.301 and 43.302.

43.310 Advertising and Sales Promotion Management I (3 q.h.)

Detailed examination of the use of advertising and sales promotion techniques as communications elements within a marketing strategy. *Prereq.* 43.302.

43.311 Advertising and Sales Promotion Management II (3 q.h.)

Continuation of Advertising and Sales Promotion Management I. Case studies and projects are used to provide training in the development of creative advertising and promotion strategies and in the use of various communications media such as television, radio, and print media. *Prereq.* 43.310.

43.313 Marketing Research I (3 q.h.)

The use of marketing research as a tool in planning, controlling, and evaluating marketing activities, including an introduction to the application of behavioral and quantitative concepts in the making of marketing decisions and the management of marketing programs. *Prereq.* 43.302.

43.314 Marketing Research II (3 q.h.)

Techniques of data collection and analysis in marketing research, forecasting, product planning, sales control, test marketing, marketing evaluation, and marketing information systems. *Prereq.* 43.313.

43.315 Marketing and Sales Seminar (3 q.h.)

Capstone marketing elective. Seniors concentrating in marketing are urged to take this course which focuses on the formulation, implementation, of overall marketing strategy. *Prereq.* 43.314.

43.316 Public Relations I (3 q.h.)

An introduction and overview of the basic principles, purposes, and methods of public relations in both profit and nonprofit organizations. Also includes discussion of community relations and employee relations.

43.317 Public Relations II (3 q.h.)

Continuation of Public Relations I. Specific training in the development of public relations programs and the overall management of the public relations function in an organization. *Prereq.* 43.316.

43.318 Introduction to Advertising (3 q.h.)

Especially for the non-marketing (including non-business) concentrator, although marketing concentrators may take the course. Focuses on advertising as a business tool as well as a force in society.

43.319 Retail Management I (3 q.h.)

Detailed examination of the concepts and techniques of store operations and merchandise management. Focuses on the activities and contributions of the various retailing institutions: independents and chains, dealerships, specialty stores, fashion stores, department stores, supermarkets, discount stores, franchises, etc. Topics include retail management, retail profit and loss, starting a retail business, store location, store planning, and the retail organization. *Prereq.* 43.302.

43.320 Retail Management II (3 q.h.)

Continuation of Retail Management I, with stress upon store operations, merchandising planning and control, merchandise management, pricing, buying, sales promotion, customer service, retail accounting, and expense management. *Prereq.* 43.319.

43.321 Consumer Education (3 q.h.)

Focuses upon the role of the consumer in the economy and how to be a better consumer. Reviews the growing impact of consumerism, environmentalism, and related legislation upon business practices. Also discusses the need for consumer competency in managing money and credit, buying products and services, evaluating advertising claims.

43.322 Sales Management I (3 q.h.)

Detailed examination of the use of the sales force as an element of marketing strategy. Selection, training, development,

organization, supervision of the sales force. *Prereq.* 43.302.

43.323 Sales Management II (3 q.h.)

Continuation of Sales Management I with emphasis upon the supervision and evaluation of the sales force. Also, role of personal selling within various marketing programs. Case studies used extensively. *Prereq.* 43.322.

43.324 Consumer Behavior (3 q.h.)

Course is concerned with developing an understanding of consumer attitudes and behavior processes as the basis of the design of marketing problems. Consideration is given to economic and behavioral models of consumer behavior and to underlying behavioral theories and concepts. *Prereq.* 43.302.

43.326 International Marketing (3 q.h.)

Concentrates on the opportunities and challenges facing the international marketing executive; the decision-making process in marketing goods abroad; the environmental forces—economic, cultural, and political—affecting the marketing process and acting as constraints on the development of marketing strategies abroad; financing international operations. *Prereq.* 43.302.

43.328 Salesmanship I (3 q.h.)

Primarily for the student interested but not experienced in personal selling. Course reviews opportunities for men and women in sales, in addition to the role that personal selling plays in the economy. Also focuses on personal selling principles useful in many types of selling. *Prereq.* 43.302.

43.329 Salesmanship II (3 q.h.)

Primarily for the student who has some actual selling experience or who has background in sales based on taking Salesmanship I. Advanced selling techniques for consumer, industrial, and institutional markets are presented. *Prereq.* 43.328 or permission of instructor.

43.330 Advertising and Sales Promotion (Intensive)

(6 q.h.)

One-quarter course covering the same material found in Advertising and Sales Promotion I and II, 43.310 and 43.311. *Prereq.* 43.302.

43.331 Sales Management (Intensive) (6 q.h.)

One-quarter course covering the same material found in Sales Management I and II, 43.322 and 43.323. *Prereq.* 43.302.

43.332 Retail Management (Intensive) (6 q.h.)

One-quarter course covering the same material found in Retail Management I and II, 43.319 and 43.320. *Prereq.* 43.302.

43.333 Salesmanship (Intensive) (6 q.h.)

One-quarter course covering the same material found in Salesmanship I and II, 43.328 and 43.329. *Prereq.* 43.302.

43.334 Marketing Management I (3 q.h.)

An advanced case method course designed to develop the student's ability to analyze and make decisions about business problems that involve the creation, distribution, and sale of goods and services. Teaches the student how to es-

tablish and control marketing budgets. Marketing Management I emphasizes the definition of marketing problems, demand analysis, consumer analysis, and marketing research. Role of the marketing manager. *Prereq.* 43.302.

43.335 Marketing Management II (3 q.h.)

A continuation of Marketing Management I, with emphasis on the formulation and implementation of marketing strategy. Emphasis is placed on product policy, channels of distribution, pricing, advertising, personal selling, and the development of integrated marketing programs of action. *Prereq.* 43.334.

43.336 Marketing Management (Intensive) (6 q.h.)

One-quarter course covering the same material found in Marketing Management I and II, 43.334 and 43.335. *Prereq.* 43.302.

43.337 Marketing and the Government (3 q.h.)

Focuses on the increasingly important legal and regulatory aspects of the environment facing marketers. Specific attention is given to present and potential impact of laws and regulation on pricing, discounts, patents, copyrights, trademarks, distribution, product warranties, advertising claims, competitive actions, environmental impact, and consumer protection. Ideally, this course will be taken during the senior year after much exposure to the marketing function. *Prereq.* 43.302.

43.338 Industrial and Institutional Marketing I (3 q.h.)

Focuses on marketing to other firms (rather than to households) and to government and other institutional buyers. Covers special management considerations in product planning, pricing, advertising, promoting, distributing, and selling to the industrial and institutional market. *Prereq.* 43.302.

43.339 Industrial and Institutional Marketing II (3 q.h.)

Continuation of 43.338. *Prereq.* 43.338.

44: Finance and Insurance

Finance

Consultant: Prof. R. J. Hehre (College of Business Administration) (437-3240)

Coordinator: W. F. Hancock, Jr. (653-2576)

Coordinator: Prof. J. Welch (College & Business Administration) (437-3267)

44.301 Introduction to Financial Management (3 q.h.)

A survey of the scope and nature of financial management including forms of ownership and their effect on the division of risk, income, and control within the organization; the impact of taxes on financial decisions; financial statements and financial analysis; planning, budgeting, and controlling cash flows including sources and uses of funds. Introduction to investments and investment management. (No prerequisite although 39.303 and 41.302 are highly recommended.)

44.310 Financial Management I (3 q.h.)

Working capital policy and the management of current assets, major sources of short-term financing, interest factors in financial decisions, capital budgeting techniques, invest-

ment decisions under uncertainty, sources and forms of long-term financing. *Prereq.* 44.301.

44.311 Financial Management II (3 q.h.)

Financial structure, leverage, valuation, rates of return, and the cost of capital; dividend policy and internal financing; timing of financial policy. External growth and mergers. Failure, reorganization, and liquidation. International finance. *Prereq.* 44.310.

44.312 Investments I (3 q.h.)

Investment goals and objectives. Various types of investments. Role of security markets. Security analysis. *Prereq.* 44.301.

44.313 Investments II (3 q.h.)

Relationship between the economy and stock prices. Corporate analysis, earnings, dividends, and cash flow. Introduction to portfolio analysis. Technical analysis vs. fundamental factors. *Prereq.* 44.312.

44.314 Credit Management I (3 q.h.)

An introduction to credit and its functions. Role of the credit executive, credit investigation, documentary credit, trade credit. Organization of the credit department. *Prereq.* 44.301.

44.315 Credit Management II (3 q.h.)

Various forms of credit and collection services. Analysis of financial statements, determination of credit worthiness. Creditor's rights, adjustment bureau operations, credit insurance and guarantees. *Prereq.* 44.314.

44.316 Profit Planning and Control I (3 q.h.)

An intensive treatment of managerial planning, budgetary control, and financial analysis. Interrelationship between functional areas in an organization using consolidated profit planning as an integrating device. Fundamental financial analysis, comprehensive profit planning, general expense planning, production planning, materials planning, purchasing. *Prereq.* 44.301.

44.317 Profit Planning and Control II (3 q.h.)

Development and application of variable budgets, planning and controlling capital expenditures, computer applications in profit planning, cash flow planning and control, cost-profit-volume analysis, performance reporting and analysis of budget variations. *Prereq.* 44.316.

44.318 Management of Financial Institutions I (3 q.h.)

A detailed examination of the role, diversity, and operation of the various financial institutions in our economy, including banking and related units; operating objectives, techniques and services. *Prereq.* 44.301.

44.319 Management of Financial Institutions II (3 q.h.)

Investment objectives and asset management. Liquidity, adequacy of capital, portfolio management and selection. Control and community relations. *Prereq.* 44.318.

44.320 Advanced Financial Management (3 q.h.)

A wider and more intensive investigation into the problems of financial management with emphasis on decision making. Specific topics include inflation, competition for investment funds, financial control and problems of the divisionalized

company, and the interrelated problems of creating and maintaining a capital structure. *Prereq.* 44.311.

44.321 Personal Finance (3 q.h.)

(Recommended for non-Finance majors.) A practical approach to problems of managing personal finances. Topics include financial planning, budgeting, obtaining credit and loans, income taxes, savings and investments, life insurance, home buying, and estate planning. Subjects are treated on a non-technical basis.

44.322 Advanced Investment Management (3 q.h.)

Theories and practice of portfolio selection and management. Special cases and their resolution. Fund management. Legal liability. *Prereq.* 44.313.

44.323 Seminar in Finance (3 q.h.)

An intensive analysis of current problems in finance. Student research and presentation of individual papers. *Prereq.* 44.311.

44.324 Seminar in Investments (3 q.h.)

An intensive analysis of current problems in investments. Student research and presentation of individual papers. *Prereq.* 44.313.

44.325 Personal Financial Management I (3 q.h.)

Development of the professional personal financial manager. Analysis of needs and objectives, personalities, limits and constraints. Techniques for need fulfillment and cash management. *Prereq.* 44.301.

44.326 Personal Financial Management II (3 q.h.)

Individual aspects of personal financial plans. Impact of taxes and tax planning. Insurance, trust arrangements, estate planning. *Prereq.* 44.325.

44.327 Personal Financial Management (Intensive) (6 q.h.)

A one-quarter course covering the same material found in Personal Financial Management I and II. *Prereq.* 44.301.

44.328 International Finance I (3 q.h.)

Introduction to international financial management in the multi-national corporation. Analysis of basic problems and finance considerations involved with international investments, trade, and payments. Planning in the international environment related to exchange rates, currency revaluations, inflation, and local government policies. *Prereq.* 44.311.

44.329 International Finance II (3 q.h.)

Analysis of the financial strategy involved with international investment alternatives, sources of capital, working capital management, fund flows, and management control through accounting and financial reporting. *Prereq.* 44.328.

44.330 New Venture Financing (3 q.h.)

Designed to assist the entrepreneur in establishing and financing his or her own business. Particular problems of small business finance as well as the expansion of established and growing businesses are given close attention. Methods of raising and safeguarding capital and the practical management of new business financial problems are covered as well. Field work and guest lecturers are featured wherever practical. *Prereq.* 44.311.

44.331 Financial Management (Intensive) (6 q.h.)

A one-quarter course covering the same material found in Financial Management I and II. *Prereq.* 44.301.

44.332 Investments (Intensive) (6 q.h.)

A one-quarter course covering the same material found in Investments I and II. *Prereq.* 44.311.

44.333 Consumer Finance (3 q. h.)

An extension of personal finance into the specific area of consumer finance for both business and non-business students. The course will give the opportunity to the student to examine consumer installment sales laws, consumer protection statutes, financing practices of banks and other financing institutions. Activities of the consumer affairs offices of the Attorney General's and Banking Commissioner's departments and their influence on consumer finance will be analyzed. Attention will be focused on a practical interpretation of laws and practices dealing with contracts.

Insurance

Coordinator (Insurance): Andrew McDonough (599-5720)

44.402 Property and Casualty Insurance I (3 q.h.)

The basis of modern property-casualty insurance. Analysis of the insurance contract, its application, meaning, and rating. *Prereq.* 44.417.

44.403 Property and Casualty Insurance II (3 q.h.)

Study of various policies including automobile, homeowners, inland marine, and commercial special multiperil. *Prereq.* 44.402.

44.404 Life Insurance I (3 q.h.)

A study of the origin, development, and basis of modern life insurance. Analysis and comparison of the various policies and riders and their uses. *Prereq.* 44.417.

44.405 Life Insurance II (3 q.h.)

The fundamentals of programming, including beneficiary designations, settlement options, and tax implications. Company organization and operations: underwriting, investments, and regulations. *Prereq.* 44.404.

44.408 Estate Planning (3 q.h.)

The use of insurance and other techniques in planning disposition, administration, and taxation of testamentary and inter vivos transfer of property. *Prereq.* 44.417.

44.411 Business Risk Management I (3 q.h.)

Designed to acquaint the business manager with the principles of risk management, the course provides both theory and technique for the identification, measurement, and treatment of the multitude of risks facing businesses today. Emphasis is placed on the effective use of insurance to meet these risks, including traditional insurance techniques, self-insurance, and captive insurance companies. (Not open to students who have taken 44.402, 44.403.)

44.412 Business Risk Management II (3 q.h.)

Continuation of 44.411. *Prereq.* 44.411.

44.413 Business Risk Management III (3 q.h.)

Continuation of 44.412. *Prereq.* 44.412.

44.414 Employee Benefit Planning I (3 q.h.)

An analysis of the various benefit programs appropriate for and pertinent to today's corporation or business. The course includes a study of relevant tax laws, insurance contracts and arrangements, and federal and state regulations pertaining to the field. Funding methods and alternatives are examined.

44.415 Employee Benefit Planning II (3 q.h.)

Continuation of 44.414. *Prereq.* 44.414.

44.416 Employee Benefit Planning III (3 q.h.)

Continuation of 44.415. *Prereq.* 44.415.

44.417 Personal Insurance Planning (3 q.h.)

A practical study of the risks faced by the individual and the proper planning of insurance programs to minimize those risks. The course includes a study of property, liability, life, health, and special insurance coverages. Involvement with the Social Security program and various retirement benefit and pension plans is covered. (Replaces 44.401).

44.418 The Social Security System (3 q.h.)

An examination of the United States Social Security System from its inception to the present including qualifications, benefits, and funding. The social security systems of other countries are studied for comparison purposes.

44.419 Employee Retirement and Security (3 q.h.)

An indepth study of the impact of the problems created by the passage of the Employment Retirement Income Security Act (ERISA) as well as an analysis of the Act. Responsibilities of both the employer and the Employee Benefit Plan Administration are stressed. *Prereq.* 44.416 or equiv. or permission of instructor.

44.420 The Occupational Safety and Health Act Analysis (3 q.h.)

An indepth study of the problems leading up to the passage of the Occupational Safety and Health Act (OSHA), the purposes of the Act, and the standards that must be met by employers under the Act. Problems with the Act and its effectiveness. *Prereq.* 44.413 or equiv., or approval of instructor.

45: Management

Consultant: Prof. D. McCarthy (College of Business Administration) (437-3256)

Associate Consultant: Mr. W. A. Gagne (647-2121)

Coordinator: Mr. R. L. Goldberg (469-0938)

General Management**45.301 Management and Organization I (3 q.h.)**

To introduce the new business person to the setting and general structure of American business which includes objectives and practices as they affect the American standard of living; the characteristics of private enterprise, and the nature and challenge of capitalism and other forms of economic enterprise. The student is introduced to the forms of business, both large and small; to the structures of organizations; the functions of management as they tend to influence the various forms of business. This course provides the opportunity for understanding what a career on the management level of organizations involves; what problems must be faced; what decisions must be reached.

45.302 Management and Organization II (3 q.h.)

To introduce the business person to methodologies in planning, organizing, directing, and controlling the functions of production, marketing, sales, and pricing as they relate to the American free enterprise systems as contrasted to other systems of international business. Examination of modern, effective, and proven tools and techniques for coping with the myriad interrelationships and intricacies of systems management. Develops a more comprehensive understanding of the total structure of business and other enterprises. *Prereq.* 45.301.

45.303 Principles and Practices of Management (3 q.h.)

Takes the student from definitions and fundamentals of business to basic concepts relating to the functions of management and to the analytical techniques which are necessary to successful decision-making. Emphasizes that management is a continuous process of action by involving the student in "how to" design an organization, understand and deal with people, evaluate the political, social, and economic environment, effectively plan, direct, and control the organization. Short cases and professional articles, included in the text, provide provocation material for discussion and reinforcement of management concepts. *Prereq.* 45.301.

45.305 Management and Organization (Intensive)

(6 q.h.)

This course combines Management and Organization I and II. See descriptions for 45.301 and 45.302.

45.306 Project Planning and Control (3 q.h.)

Employs a systems approach to planning, scheduling, and controlling of large and small projects. The course is a combination of lectures and case studies that introduce and utilize various tools and techniques including bar charts, networks, critical path analysis, and an introduction to PERT. The course will assist the student in planning, scheduling, and allocating resources as a basis for controlling projects and comparing actual against planned performance. It is hoped that students will gain experience through their active participation in the case studies. *Prereq.* 45.301.

45.310 Management Decisions and Policies I (3 q.h.)

Examines the total management process associated with the formulation and implementation of an effective strategy for the entire enterprise. Part I deals with the development of corporate objectives, plans, and policies with emphasis on the interaction between the enterprise and its environment and the consideration of public responsibility. *Prereq.* 100 quarter hours.

45.311 Management Decisions and Policies II (3 q.h.)

The organizations and administrative functions for converting strategic plans into corporate performance and achievements are considered. The concepts of strategic planning and implementation are explored from the perspective of the general manager; particular attention is given to examination and identification of the functions, responsibilities, styles, values, and organization relationships of enterprise top management. Cases are drawn from profit and non-profit oriented enterprises of various sizes in diversified fields, operating within many different business environments. Students

should plan to actively participate in class discussion of case studies. *Prereq.* 45.310.

45.312 Management Decisions and Policies (Intensive) (6 q.h.)

Please refer to the course description for Management Decisions and Policies, I and II. The contents of the intensive course are the same except it is presented twice per week during a single quarter. *Prereq.* 100 quarter hours.

45.313 Management Seminar I (3 q.h.)

A broad interdisciplinary project utilizing one or more of the techniques of library research, field research, field surveys, and organizational audits. Students will have the opportunity to utilize the knowledge gained in earlier course work. *Prereq.* 45.311.

45.314 Management Seminar II (3 q.h.)

A continuation of Management Seminar I. *Prereq.* 45.313.

45.315 Effecting Change (3 q.h.)

Applies managerial concepts and practices within policy or resource constraints to real time operational situations. Recognizing that today's business manager must operate in an environment of accelerating change, the course considers current factual examples of changing situations and examines guidelines for their resolution. In addition, it explores the process by which the manager makes decisions dealing with the impact of change on the organization and its personnel. Utilizing actual problems confronting today's organizations, the student progressively investigates change stemming from actions of managers and other individual contributors at all levels of the organization. This investigation attempts to determine the sources of change and viable alternative courses of action. The course develops a conceptual framework for handling change in one's own business career. *Prereq.* 45.303.

45.318 Motivation, Management, and Leadership

(3 q.h.)

This course applies some of the important concepts from behavioral science and analyzes theories of motivation and leadership for use by the manager. Through readings and discussion of cases and student-introduced motivation and leadership situations, the student is provided an opportunity to view and understand the working environment as a combination of processes which influence performance and the outcome of individual and group endeavor. *Prereq.* 45.303.

45.323 Entrepreneurship and Small Business Management I (3 q.h.)

This course is designed as an introduction to the major aspects of managing a small business. Areas probed cover basic elements of entrepreneurship and initial phases of planning, including legal, financial, marketing, control organization, and management functions. To provide realism, actual cases involving small businesses will be used with background text. *Prereq.* 45.301.

45.324 Entrepreneurship and Small Business Management II (3 q.h.)

This course is intended as a follow-up to Small Business Management I and is a course for advanced business stu-

dents. Emphasis will be placed upon developing business plans, analyzing performance, problem identification, maintaining financial health, and planning for the future. Actual cases involving small businesses will be used in conjunction with background reading. *Prereq.* 45.323.

45.325 Entrepreneurship and Small Business Management (Intensive) (6 q.h.)

Same as 45.323 and 45.324. Not open to students who have taken those courses.

Industrial Management

Consultant: Mr. J. M. Rosenfeld (969-4783)

Coordinator: Mr. J. D. Mukjian (268-9800)

45.400 Production Management and Manufacturing Systems I (3 q.h.)

To acquaint students with the broad range of activities that occur in production facilities, this course introduces students to organization principles, to matters concerning the manufacturing system, the choice of equipment, and the location and layout of the plant. It deals with product and process development, setting quality and production standards, plant production schedules, and the production flow through the transformation process. Emphasis is placed on manufacturing costs, product quality, and the system's delivery performance.

45.401 Production Management and Manufacturing Systems II (3 q.h.)

Selected readings in modern production management techniques. Facilities planning and design including plant layout, materials handling, and related equipment. Engineering economy. *Prereq.* 45.400.

45.402 Production Management and Manufacturing Systems (Intensive) (6 q.h.)

Same as 45.400 and 45.401. Not open to students who have taken those courses.

45.403 Manufacturing Processes (3 q.h.)

Production processes and material selection in the production and manufacture of hard goods, including selection of best methods by study of casting, machinery, forming, joining, extrusion, finishing, and assembly. The analysis of advanced manufacturing processes, including mass production, numeric control, central vs. line layout systems, automated systems, computer control equipment and systems, equipment and machinery selection, and replacement policies.

45.404 Value Management (3 q.h.)

An organized technique for challenging costs by analyzing a product or method in terms of value, function, and costs without sacrificing essential quality.

45.405 Industrial Safety (3 q.h.)

A study of the organization and administration of a comprehensive accident-prevention program, including analysis of industrial hazards and accidents, corrective actions, and the responsibilities of all management echelons, from the safety engineer to top management.

45.406 Methods Analysis, Motion and Time Study (3 q.h.)

Methods analysis and plant layout; work design, operation analysis, man-machine relationship; elements of motion and time study. Measurement techniques and application. Production standards development for job shop operations, applying curve, table, equation, nomograph, family, and multivariable techniques, and utilizing work sampling methods.

45.407 Operations Management (3 q.h.)

Develop student skills in analyzing and managing the operations of a manufacturing operation. Integrates the techniques and methods, both quantitative and qualitative points of view, and applies them to problems that arise in planning and controlling manufacturing and other operating systems.

45.409 Cases in Industrial Management (3 q.h.)

Cases describing particular operating situations as they are faced by managers in business in which the students base their analyses on an array of facts and judgments. The student will become aware of the skills the manager brings to bear on business problems requiring a diverse background of knowledge about the technologies and techniques of the field. The basic disciplines in the quantitative and behavioral sciences and an understanding of the specific situational context are integrated. Cases are designed to provide the necessary background in topics specifically relevant to production problems.

45.410 Production Control and Inventory Management (3 q.h.)

Theory and practice of the economic control of inventories is developed. A broad spectrum of models for production control and inventory management is examined. Solutions are sought by analytical methods and by numerical simulation. Goals include bringing the range of concept and techniques to the point of useful application in practical design.

45.411 Industrial Decision Making I (3 q.h.)

An application-oriented introduction to prescriptive decision analysis. The development of a systematic approach to problem solving and decision making; decision theory; structure of human decisions. Modeling of the decisions process. *Prereq.* 10.533.

45.412 Industrial Decision Making II (3 q.h.)

Application of probability and utility theory, psychology, and economics to the decision process. Topics covered include the perception of options, uncertainties, and objectives, decision trees, and other modes of representation. Criteria of choice including preference and utility, attitude toward risk, expected value. Practical usefulness of techniques with application to career planning, job and organization design and managerial effectiveness. Survey of current practices, real world cases. *Prereq.* 45.411.

45.413 Manufacturing Seminar I (3 q.h.)

Problems of manufacturing operations at the plant manager level, analysis of manufacturing problems, including controls of the manufacturing process; selected case studies. *Prereq.* 45.403, 45.410.

45.414 Materials Management (3 q.h.)

The development and examination of materials management, including objectives, organization, and functions as

they relate to cost improvement, investment control, and ability to serve the market; materials system; selected case studies.

45.416 Manufacturing Seminar II (3 q.h.)

The student pursues a program of independent study on an approved topic in a particular area of Industrial Management under the supervision of a faculty member. *Prereq.* 45.413.

45.417 Industry and the Environment I (3 q.h.)

Features in-depth analyses of situations where economic interests and environmental concerns are in conflict. The course reviews the operation of the capitalistic system as a foundation for examining the resultant ecological risks associated with chemicals, strip-mining, and super-tankers.

45.418 Industry and the Environment II (3 q.h.)

The thoughts of Amory Lovins and E.F. Schumacher serve as the basis for examining the economic benefits associated with energy conservation, alternative energy systems, and solid waste recovery systems. *Prereq.* 45.417.

45.419 Managing for Results (3 q.h.)

This course serves as a forum for the discussion of the wide ranging theories of Peter Drucker. Emphasis is placed on the concepts and methods available to the result-oriented manager. Topics are derived from selected writings of Drucker. Relationships between theory and practice including implementation will be established.

Purchasing

Coordinator: Mr. G. E. Maguire (272-4000 ext. 3633)

45.451 Purchasing I (3 q.h.)

An introduction to the function of purchasing in the industrial organization. The span of purchasing responsibilities, objectives, organization, and personnel requirements. Purchasing policy and systems. The role of the computer in regulating purchasing planning, transactions, and information retrieval. Acquisition of purchased materials, development of sources of supply, and assurance of materials quality. Determination and maintenance of required inventory levels. Control of inventory investment, price determination, cost and price analysis of purchase transactions. Make or buy decisions. Role of standardization and value analysis.

45.452 Purchasing II (3 q.h.)

The process of purchase negotiations, budgets, purchase of capital equipment. Purchasing for public and non-profit institutions. Disposition of surplus and obsolete materials. Traffic and material handling. Forward buying and speculation. Ethical considerations in purchasing. Purchasing law, contract cancellations, purchasing reports, and evaluation of purchasing performance. Control and audit procedures. *Prereq.* 45.451.

45.453 Purchasing (Intensive) (6 q.h.)

Same as 45.451 and 45.452. Not open to students who have taken those courses.

45.455 The Materials Acquisition Function (3 q.h.)

A survey of the procurement function as found in industry. This course is designed to furnish students with a broad comprehension of the acquisition function. The mission, proced-

ures, and interfacing of purchasing with other functions and its legitimate objectives are explored. Systems techniques, organizational structures and required skills are investigated with particular attention given to the integration of this function into the total cycle of product creation.

45.457 The Art and Techniques of Purchasing Negotiation (3 q.h.)

The process of buyer/seller communication and exchange in arriving at sound purchasing transactions. This course explores the reasons for choosing this negotiation, interactive process for arriving at a more satisfactory agreement between buyer and prospective vendor. Accepted strategies and tactics employed by both parties as effective means of achieving legitimate objectives in industrial purchasing activity. Economic and technical considerations are discussed. Psychological and interpersonal environment of the negotiating situation are explored in detail. Students have an opportunity to engage in workshop demonstrations of effective negotiating practice. *Prereq.* 45.451.

45.458 Materials Requirements Planning (3 q.h.)

Analyses a new process (MRP) for integrating and organizing purchasing and inventory management functions. System is based on production schedule requirements and variations rather than on historical data. System aims at assisting the process of capacity planning for maximum manufacturing efficiency. MRP provides a rational base for economical procurement planning and control. Concentration on MRP's unique concepts for managing material supply activity and other related, critical operating problems.

45.459 Subcontract Management (3 q.h.)

The administration of procurement subcontracts is of major concern to many industrial specialties, purchasing, sales, engineering, project management, finance, manufacturing, and general management. This course aims at considering all aspects of this significant procurement function, from development of the work statement through source selection, negotiation, award and post-award administration. Selected cases and exercises will be employed to enhance the students' appreciation of the practical aspects of subcontracting policies and procedures as well as providing material for class participation. Subcontract requirements in both a commercial as well as a government environment will be treated. *Prereq.* 45.452.

45.460 International Procurement (3 q.h.)

An overview and introduction into international procurement with emphasis on negotiations of special terms and conditions, offset, coproduction buys. Differences in overseas freight management financial and contractual requirements. Discussion of reliability/quality and procurement practices in international procurement. *Prereq.* 45.452.

47: Real Estate and Hotel and Restaurant Management

Real Estate

Consultant: Mr. John P. Driscoll, Esq. (933-2242)

47.320 Real Estate Fundamentals I (3 q.h.)

An introduction to the basic principles and terminology of real

estate to serve as a background for application in the various practices of the real estate business. (Replaces 47.301)

47.321 Real Estate Fundamentals II (3 q.h.)

A general examination of the practices of real estate brokerage (including the preparation for the broker's or sales person's state exam), real estate appraisal, finance, development, management, and investment. *Prereq.* 47.320. (Replaces 47.302)

47.322 Real Estate Fundamentals (Intensive) (6 q.h.)

Same as 47.320 and 47.321. Not open to students who have taken those courses.

47.323 Real Estate Appraisal I (3 q.h.)

A fundamental course in the appraisal of single family residences; analysis of city or town neighborhood influences, site evaluation, building diagnosis, depreciation; study of the various approaches to value; appraisal report preparation. *Prereq.* 47.321. (Replaces 47.306)

47.324 Real Estate Appraisal II (3 q.h.)

A specialized course in the appraisal of income properties; application of the cost, market and income approaches to apartment buildings, other commercial and industrial properties. *Prereq.* 47.323. (Replaces 47.307)

47.325 Real Estate Appraisal III (3 q.h.)

A continuation of Real Estate Appraisal II with special emphasis on the application of the various methods of capitalization and residual techniques. Repeated classroom problems, assigned exercises, case studies and field trips will be employed. *Prereq.* 47.324. (Replaces 47.308)

47.326 Advanced Real Estate Appraisal I (3 q.h.)

An advanced course in the evaluation of multi-family residential and other income properties, with special attention to advanced appraisal techniques, including the Ellwood and Akerson Tables. Case studies will be scheduled as well as field trips involving actual appraisal problems. *Prereq.* 47.325 or *permission of instructor.* (Replaces 47.309)

47.327 Advanced Real Estate Appraisal II (3 q.h.)

A continuation of Advanced Real Estate Appraisal I, with emphasis on feasibility analysis, using current advanced techniques and decision theory analysis. Case studies and field trips will be scheduled. *Prereq.* 47.326. (Replaces 47.310)

47.328 Real Estate Financial Analysis I (3 q.h.)

Provides the tools which permit the student to critically examine and analyze the viability of any proposed real estate investment. Examines in detail, the financial aspects of acquisition, ownership, and disposition. Considers taxation of investments, forms of property ownership (organization of the venture), analysis of operating statements, financial accounting, use of leverage, "tax-sheltered" investments, special situations and other considerations. Develops criteria of risk and return on investment (R.O.I.) which should be established by various types of investors. *Prereq.* 47.325 or *permission of instructor.* (Replaces 47.304)

47.329 Real Estate Financial Analysis II (3 q.h.)

A detailed analysis of the risks and rewards of real investments, problems involved in financing income properties,

with emphasis on the use of case studies, homework problems, class discussion and debate. Class participation is stressed. *Prereq.* 47.328. (Replaces 47.305)

47.330 Real Estate Development (3 q.h.)

A practical step-by-step approach to the organization and development of a real estate project for the entrepreneur, banker, or broker. Topics include the role of the developer; acquisition of land; site analysis; construction finance; gap financing and permanent commitments; project budgeting for capital costs and for income and expense; selection of professionals; negotiations of agreements with contractors and owners; marketing the completed project. Case studies and guest lecturers may be used. *Prereq.* 47.329 or *permission of instructor.* (Replaces 47.311)

47.331 Real Estate Law I (3 q.h.)

This course concentrates on private real estate law including ownership rights in land; leasehold rights and easements in the land of another; legal forms of ownership; the transfer and acquisition of title and of other interests; recording of deeds, leases and other instruments; the landlord/tenants relationship. (Replaces 47.312)

47.332 Real Estate Law II (3 q.h.)

This course concentrates on public real estate law including government powers, rights and controls on privately owned real estate; zoning and subdivision controls; conservation controls; taxation of real estate; rent controls, eminent domain. (Replaces 47.313)

47.333 Real Estate Law III (3 q.h.)

This course is a continuation of Real Estate Law II with emphasis on case study method. Class participation and discussion are stressed. (Replaces 47.314)

47.334 Real Estate Management I (3 q.h.)

This course is designed to prepare the student for the practical problems of real estate management. Stresses the requisite day-to-day management of commercial, industrial, and residential properties as well as the need for a management strategy as it relates to long-term property values. *Prereq.* 47.321 or *permission of instructor.* (Replaces 47.316)

47.335 Real Estate Management II (3 q.h.)

Continuation of 47.334. *Prereq.* 47.334. (Replaces 47.317)

47.336 Real Estate Management III (3 q.h.)

Continuation of 47.335. *Prereq.* 47.335. (Replaces 47.318)

47.337 Real Estate Title Examination (3 q.h.)

A specialized course dealing with the examination of title to real estate and with the preparation of a complete report. *Prereq.* 47.321 or *permission of instructor.* (Replaces 47.319)

47.338 Real Estate Financial Analysis (Intensive) (6 q.h.)

Same as 47.328 and 47.329. Not open to students who have taken those courses.

Hotel and Restaurant Management

Consultant: Robert W. McLean (445-5700)

47.400 Introduction to Hotel and Restaurant Management I (3 q.h.)

A survey of the hospitality industry in today's economy. Emphasis on industry growth and development, management problems, and principles of hotel and restaurant management.

47.401 Introduction to Hotel and Restaurant Management II (3 q.h.)

A continuation of Hotel and Restaurant Management I. *Prereq.* 47.400.

47.403 Food and Beverage Management (3 q.h.)

A survey of the essentials of food and beverage controls from both operational and accounting standpoints. Methods and forms used in the industry will be examined. (Laboratory fee).

47.404 Managerial Accounting for the Hospitality Industry (3 q.h.)

A study of the financial practices and systems used in the hospitality industry. Controls, budgeting, financial statements, and specialized industry accounting procedures are analyzed. *Prereq.* 41.302.

47.405 Management Systems for the Hospitality Industry (3 q.h.)

A study of the information systems utilized in the hospitality industry to provide better management information for analysis and decision making. *Prereq.* 49.311.

47.406 Front Office Management (3 q.h.)

The role and functions of the front office will be studied as it relates to the operation of the entire hotel. The following areas are covered: front office structure, registration, payment, reservations, and night audit. *Prereq.* 45.301.

47.407 Hotel and Restaurant Law (3 q.h.)

An introduction to the fundamental laws, rules, and regulations applicable to the hospitality industry. *Prereq.* 49.302.

47.408 Hospitality Marketing Management (3 q.h.)

An analysis of the market in which the hospitality industry operates. The development of a marketing plan and how to implement this plan in terms of the overall operation. *Prereq.* 43.301.

47.409 Design and Layout (3 q.h.)

A consideration of the design and layout applicable to the hotel and restaurant industry.

47.410 Food Preparation I (3 q.h.)

Introduction to the fundamentals of food preparation and service with emphasis on terminology and equipment of the food service industry. Students receive classroom instructions and participate in demonstrations of preparing food in a small-quantity laboratory. Menu planning, requisitioning, pricing, as well as preparation and service are covered. (Laboratory fee)

47.411 Food Preparation II (3 q.h.)

A continuation of Food Preparation I. *Prereq.* 47.410. (Laboratory fee)

47.412 Food Service Engineering and Sanitation (3 q.h.)

Examines the organization of the maintenance and engineering function and provides the technical information necessary to establish effective preventive programs. Also, details the fundamentals of sanitation for foodservice employees and covers practical guidance in safe food handling.

47.413 Food Technology (3 q.h.)

A survey of food processing, packaging, nutrition, quality assurance, and regulatory agencies.

47.414 Food Production Management (3 q.h.)

An analysis of the management responsibilities and the techniques of quality and quantity food production.

47.415 Seminar in Hotel and Restaurant Management I (3 q.h.)

A broad interdisciplinary project utilizing one or more of the techniques of library research, field research, field survey, and organizational audits. Students will have the opportunity to utilize the knowledge gained in earlier course work. *Prereq.* Seniors only.

47.416 Seminar in Hotel and Restaurant Management II (3 q.h.)

A continuation of Seminar in Hotel and Restaurant Management I. *Prereq.* 47.415.

47.402 Introduction to Hotel and Restaurant Management (Intensive) (6 q.h.)

Same as Introduction to Hotel and Restaurant Management I and II. Not open to students who have taken 47.400 and/or 47.401.

48: Transportation and Physical Distribution Management

Consultant: Dr. R. C. Lieb (College of Business Admin.) (437-3236)

48.301 Elements of Transportation (3 q.h.)

An introduction to regulatory, economic, and management aspects of transportation from the viewpoint of shippers, government, and carrier management. Topics include: cost, rates, operations, entry, mergers, and intercity passenger carriage. A course of general interest to students of business, law, or government.

48.302 Physical Distribution Management (3 q.h.)

An introduction to the physical distribution management concept. Topics include inventory control, warehousing, cost control, and locational strategy. Course uses text and case materials developed from industry situations.

48.303 Organization and Control of Physical Distribution Management (3 q.h.)

Establishment of the firm's physical distribution organization. Interrelationships with other company functions. Examination of advanced physical distribution problems.

48.304 Management of Warehouse Operations (3 q.h.)

A practical course in the management of warehouses. Topics include: site selection, construction, finance, operations, measurement of performance, and warehouse technology.

48.305 Traffic Management I—Rates and Tariffs (3 q.h.)

A practical course in the interpretation and use of tariffs. Topics include classifications, rate scales, tariff rules, rate-making procedures, and ICC law and practice.

48.306 Traffic Management II—Selected Topics (3 q.h.)

Further study of traffic management covering such topics as routing, claims, insurance, consolidation, and packaging. *Prereq.* 48.305.

48.307 Contemporary Issues in Transportation and Distribution (3 q.h.)

This course focuses attention on a limited number of topics which are of particular interest during the current academic year.

48.308 Transportation Regulation and Promotion I (3 q.h.)

Study of the history and content of the Interstate Commerce Act.

48.309 Transportation Regulation and Promotion II (3 q.h.)

Study of administrative law and procedures, the code of ethics, and general rules of practice. Analysis of cases pertinent to the Commerce Clause. Preparation for the ICC Practitioners Exam. *Prereq.* 48.308.

48.310 Surface Transportation I—Railroad Management (3 q.h.)

A management-oriented course that considers the current and future status of the railroads. Topics include: investment and finance, mergers, marketing, labor relations, diversification, and public policy.

48.311 Surface Transportation II—Motor Carrier Management (3 q.h.)

A management-oriented course that examines the regulated motor carrier industry. Topics include: equipment selection, finance, mergers, marketing, labor relations, routes, operations and control, and public policy.

48.312 Surface Transportation III—Marine Transportation (3 q.h.)

A management-oriented course that examines the U.S. Merchant Marine. Topics include: international trade patterns, government promotion and regulation, technological innovations, port facilities, and labor relations.

48.313 Surface Transportation IV—Private Trucking (3 q.h.)

Beginning a private trucking operation. Topics include: legal guidelines, purchase versus lease, operations, and performance measurement.

48.314 Air Transportation (3 q.h.)

Economics and regulation of Civil Aeronautics Board certified air carriage. Topics include: entry, operations, pricing, mergers, cost analysis, and financing.

48.315 Urban Transportation (3 q.h.)

The scope and status of transportation in our metropolitan area. Examination of the planning and financing of urban transportation systems. The role of local, state, and federal government units. The problems of transit management.

48.316 Carrier Management (3 q.h.)

The transportation system from the carrier viewpoint; managerial response to a heavily regulated and rapidly expanding environment; focus on carrier decision making including routes, scheduling, financing, and pricing of services.

48.317 Case Studies in Transportation I (3 q.h.)

The course format will review the leading cases and rules of law that apply to selected problems in transportation. Problems will be drawn from the current Interstate Commerce Commission examination questions and the American Society of Traffic and Transportation examination program. These two sources reflect the quality of subject knowledge and material mastery that is judged satisfactory by "industry standards." The problems and questions presented by these two sources represent the current trends in domestic and international transportation. Each student will be assigned specific case problems, questions, and research topics which must be prepared for classroom presentation. The distribution of questions and topics will be such that each student is afforded the broadest possible range of material to be studied.

48.318 Case Studies in Transportation II (3 q.h.)

Continuation of 48.317. *Prereq.* 48.317.

48.319 Case Studies in Transportation III (3 q.h.)

Continuation of 48.318. *Prereq.* 48.318.

49: Law

Consultant: Mr. H. Olins, Esq. (482-6998)

49.301 Law I (3 q.h.)

Study of the nature, formation, and essential elements of contracts, including performance and remedies for breach. Agency, rights and duties of principal and agent, scope of authority, relationships to third persons.

49.302 Law II (3 q.h.)

Sales as governed by the Uniform Commercial Code including the law of warranty. Business organizations, partnerships, corporations, and other important business forms. *Prereq.* 49.301.

49.303 Law (Intensive) (6 q.h.)

Introduction to the legal system. Agency: rights and duties of principal and agent, scope of authority, relationships to third persons. Contracts: nature, formation and essential elements of contracts. Sales: as governed by the Uniform Commercial Code including law of warranty. Property: real property, personal property and bailments. Commercial paper: a study of the function of negotiability, emphasis on bank checks and promissory notes. Business organizations: partnerships, corporations and other important business forms. Bankruptcy and secured transactions.

49.304 Law and Social Issues (3 q.h.)

A study of the structure and dynamics of the American legal system approached through an analysis of selected cases dealing with social issues.

49.305 Law III (3 q.h.)

Commercial paper: a study of the function of negotiability;

emphasis on bank checks and promissory notes. Property: real property, personal property and bailments. Bankruptcy and secured transactions. *Prereq.* 49.302.

Management Information Systems

Consultant: Mr. T. J. McNamara (890-8400 x2047)

Coordinator (EDP): Mr. T. Kelly (726-2273)

Associate Consultant (Programming): Mr. J. Sullivan (894-8020 x600)

Coordinator (Systems): Mr. N. Conklin (667-3111 x2870)

49.310 Electronic Data Processing I (3 q.h.)

An introduction to computers, including discussion of numbering and coding systems; data processing history; business and computer concepts; hardware; and input and output devices.

49.311 Electronic Data Processing II (3 q.h.)

A continuation of EDP I including a discussion of the systems development life cycle; programming tools and preparation; and overview of COBOL concepts; use of computers and specific business applications; data communication concepts, time sharing, data base principles and other trends in the field of EDP.

49.314 Electronic Data Processing (Intensive) (6 q.h.)

Intensifies material of EDP I and EDP II into a single quarter by doubling frequency of class meetings and pace of non-class work.

49.320 COBOL For Non-Programmers (3 q.h.)

A one-quarter introductory computer programming course for business students. Fundamentals of computer programming are introduced along with COBOL, Common Business Oriented Language. The divisions of COBOL, data file structures, and verb actions are studied. Each student will prepare and check out several programs using the University Computer Center. *Prereq.* 49.311.

49.321 COBOL Programming I (3 q.h.)

Fundamentals in computer programming for business applications are introduced. COBOL, Common Business Oriented Language, the standard business programming language of EDP, is studied. Principles of flowcharting, as well as input and output formats, are studied. Programs prepared by the student are run and checked out, using the University Computer Center or a computer available to the student. *Prereq.* 49.311.

49.322 COBOL Programming II (3 q.h.)

Programming in COBOL is presented in more detail. Business data processing functions of input editing, record processing, and output editing are illustrated and implemented in programs prepared and run on the University's computer. Student programs utilize punch card input and line printer for output. *Prereq.* 49.320 or 49.321.

49.323 COBOL Programming III (3 q.h.)

More sophisticated computer programming techniques are applied to the solution of more complex business application problems. Different techniques and approaches are discussed, e.g. top-down design will be discussed and structured programming techniques will be practiced. Meetings

are divided into lectures and computer problem-solving sessions. File processing problems in magnetic disk and magnetic tape are presented. COBOL subroutines and sort techniques are studied. *Prereq.* 49.322.

49.339 COBOL Programming (Intensive) (9 q.h.)

Intensifies material of 49.321, 49.322, and 49.323 into a single quarter by meeting twice a week for three hours per session. The pace of non-class work is also intensified. *Prereq.* 49.311.

49.324 Assembly Programming I (3 q.h.)

Introduction to assembler language programming using the University's computing system. Organization, representation, and processing data within the computer. Looping, instruction modification, indexing, indirect addressing, and data retrieval are introduced. cursory survey of assembler languages in general. *Prereq.* Demonstrated familiarity with any currently available computer language.

49.325 Assembly Programming II (3 q.h.)

Further exploration of assembler language techniques, other addressing structures, floating point techniques, coding, and use of macro instructions. Input-output routines, use of operating systems for job scheduling, resource allocation, file handling. Business problems analyzed, flowcharted, programmed, and debugged on the University's computer by students. Debugging of problems by core dump analysis. *Prereq.* 49.324.

49.326 Assembly Programming III (3 q.h.)

Utilization of business data processing hardware on the University's computing system. Further use of operating system, divide independent file handling. Blocked and unblocked file manipulation. Application of assembler language to a sophisticated programming project. *Prereq.* 49.325.

49.327 FORTRAN Programming I (3 q.h.)

Designed to give the opportunity to the student to gain a working knowledge of FORTRAN, the modern problem oriented computer language. Enables the professional to understand the use of a computer in solving problems in business, mathematics, and the social and physical sciences by introducing him or her to problems in selected applications and illustrating use of FORTRAN in finding solutions. *Prereq.* 49.311.

49.328 FORTRAN Programming II (3 q.h.)

The course helps provide the student with practical experience in the use of FORTRAN in solving significant problems in business, mathematics, and the social and physical sciences. Problems of sufficient complexity are used to allow the student to actively participate in the various steps necessary to analyze, define, document, and solve the problem using FORTRAN. *Prereq.* 49.327.

49.329 FORTRAN Programming III (3 q.h.)

A sophisticated set of problems is presented to teams of students for solution. Consultations with instructor allow students to actively participate in solving problems with the use of FORTRAN. *Prereq.* 49.328.

49.330 RPG Programming (3 q.h.)

A working knowledge of the Report Program Generation lan-

guage. This language is suited to small scale computer usage for such tasks as: report generations; file updating; various utility functions. Students write the debug class problems using a University computer or a computer available to the student. *Prereq.* 49.311 or 49.314.

49.331 Computer Operating Systems I (3 q.h.)

Survey-type course describing operating systems and investigating the full range of systems services available under computer operating systems. Special emphasis is placed on their value as tools for developing management information. (Note: This quarter could stand alone as management tool for decision making.) *Prereq.* 49.323.

49.332 Computer Operating Systems II (3 q.h.)

Specific software covered is systems supervisor, data management system, FORTRAN, COBOL, PL/1, and special purpose compilers. Also investigated are operating systems which accommodate network analysis, pert systems, simulation packages, and statistical analysis packages. Detailed analysis on data management systems with specific case studies and development of operating system programs. *Prereq.* 49.331.

49.333 Mini Computers in Business I (3 q.h.)

An introduction to the application of minicomputers in the business environment. Topics covered include: analysis of cost/performance; systems consideration of minis versus alternatives; role of minis in a variety of applications such as: time sharing, intelligent terminals, data entry and gathering, data communications, and others. Emphasis is placed on evaluation of minis as cost-effective elements of a business system. *Prereq.* 49.321, 49.363.

49.334 Mini Computers in Business II (3 q.h.)

Development of system specifications, functional configurations, systems tradeoffs, site preparation, and maintenance considerations. Detailed analysis of systems with specific case studies related to business applications. *Prereq.* 49.333.

49.336 Data-Base Systems (3 q.h.)

An introduction to data-base approach to the design of integrated information applications. Data-base design, data structures, diagramming, CODASYL data definition language, data manipulation language, data-base implementation and evaluation. *Prereq.* 49.322, 49.361.

49.340 BASIC Programming (3 q.h.)

An introductory level course in computer programming using the language BASIC. Beginners All-purpose Symbolic Instruction Code is an easily learned, comprehensive language that will allow students to begin using EDP methods in problem solving. Students will write, debug, and execute a number of individual and class projects using the University Computing System. BASIC is a programming language that lends itself well to execution from "off-site" terminal hardware.

49.341 Advanced COBOL Programming (3 q.h.)

This one quarter programming course is offered for the advanced COBOL programmer. Several kinds of programming disciplines will be presented. Programming techniques required for data base systems, data communications, random

access procedures, programming efficiencies will be studied in detail. *Prereq.* 49.323.

49.360 Systems Analysis and Design I (3 q.h.)

A study of some of the techniques used in systems analysis and design as well as the study of how to use them effectively. It includes a look at the human factors in systems including the concepts of leadership and power; the identification and resolution of conflict. In addition, it covers data collection techniques, system flow-charting and narratives and proper interviewing tapes, including note-taking, listening, and report preparation. *Prereq.* 49.311.

49.361 Systems Analysis and Design II (3 q.h.)

This quarter builds upon what was studied in Systems Analysis and Design I. It includes techniques in work measurement; work simplification; writing and maintenance of manuals. In addition, the course covers system documentation, user involvement, and user training. Case studies will be used when appropriate. *Prereq.* 49.360.

49.362 Systems Analysis and Design III (3 q.h.)

This quarter covers the use of computers and other electronic data processing concepts in a total system. It covers input preparation including OCR, on-line terminals; processing including multiprogramming, mini-computers, micro-computers; file design and storage; output possibilities including COM, audio and video. It discusses the pros and cons of the differing alternatives and helps the student make a reasonable choice in each case. *Prereq.* 49.361.

49.363 Systems Analysis and Design IV (3 q.h.)

This final quarter studies "varying advanced techniques" and their uses in systems work. It covers data communications including data flow, network design, terminal selection, tariffs, and costing. In addition, there is a study of time-sharing and operations research techniques as well as the study of specific business systems. *Prereq.* 49.362.

49.375 Systems Analysis and Design (Intensive) (6 q.h.)

Same as 49.360 and 49.361. Not open to students who have taken those courses.

49.364 Data Systems Administration (3 q.h.)

The major phases involved in the study and detailed planning for effective use of data processing equipment and management sciences in meeting the information needs of business, including the analysis of company objectives, feasibility study, system specifications, equipment selection, and implementation of the new system. *Prereq.* 49.311 or 49.314.

49.365 Business Data Processing Applications I (3 q.h.)

Each student is given an opportunity to understand and perceive a company as a total operating system. Specific systems applications examined include inventory control, purchasing, accounts payable, and their integration. Specific techniques on data collection including data communications are dealt with during the quarter. A field trip to a communications training center and a team case study project may complete the quarter. *Prereq.* 49.364.

49.366 Business Data Processing Applications II (3 q.h.)

A continuation of 49.365, covering additional information systems of accounts receivable, sales analysis, the design of

integrated systems, a review of "on-line" systems, and computer system simulation. The opportunity to participate in a computer simulation exercise is offered during a field trip. A team case study project completes the quarter. *Prereq.* 49.365.

49.367 Senior Seminar I (3 q.h.)

The student pursues a project on an approved topic tailored to meet individual needs in a particular area of MIS/EDP under the supervision of a faculty member.

49.368 Senior Seminar II (3 q.h.)

A continuation of Senior Seminar I. *Prereq.* 49.367.

49.369 Auditing Data Processing (3 q.h.)

Develops and discusses audit techniques, specifically towards EDP systems, programming, and operations. Emphasis on EDP standard practices, procedures, documentation, and safety and security. Defines EDP business risks and related exposures; i.e., fraud, embezzlement, misuse or destruction of company assets, or business interruption. Discusses EDP portion of accounting requirements of the Foreign Corrupt Practices Act of 1977. Course content is oriented toward EDP managers, internal auditors, and public accountants. Useful to the auditor, as it defines EDP specific audit techniques and is correspondingly useful to the EDP manager regarding what to expect when receiving a comprehensive audit. *Prereq.* 49.311.

49.373 Information Processing in Medicine (3 q.h.)

A non-technical survey of the impact and potential of computers in medicine: medical records; clinical reporting systems; automated laboratories; on-line monitoring; research needs; medical administration requirements. Analysis of the content and interactions of medical information sub-systems. Implications of computerization of various medical activities; equipment selection; organizational considerations. *Prereq.* 49.310 or 49.314.

49.376 Computer Privacy and Security (3 q.h.)

A comprehensive review of the real threats posed by modern electronic computers as well as threats to computers and their users. Includes a review of the privacy issue as well as security approaches, techniques, and tools used to safeguard computers. Actual case studies of computer abuse. *Prereq.* 49.311.

Quality Control and Management Sciences

Associate Consultant: Prof. R. A. Parsons (College of Business Administration) (437-3255)

49.380 Introduction to Operations Research (3 q.h.)

Mathematical programming; linear programming; graphical, Simplex, and transportation models; sensitivity analysis; the dual, degeneracy, integer programming; non-linear programming.

49.381 Operations Research Applications (3 q.h.)

Special topics including decision making under uncertainty; decision tree analysis; dynamic programming, queuing theory, PERT-CPM and simulation. *Prereq.* 49.380.

49.382 Statistical Quality Control (3 q.h.)

Description and practical application of the basic statistical

quality control methods for quality assurance, quality control, and quality improvement of products and services; the determination of process capability; the use of quality control charts for measurable and non-measurable quality characteristics; application of statistical and probability considerations in acceptance sampling of purchased material, work in process, and outgoing products; methods of predicting sampling results using the hyper-geometric, the binomial, and the Poisson distributions; risks involved in sampling and concepts of AQL, RQL, and AOQL. *Prereq.* 39.313.

49.383 Management of Quality Control (3 q.h.)

Modern concepts of managing the quality control function of a company to maximize customer satisfaction at minimum quality cost; the idea of total quality control; measurement of the cost of quality, development of a coordinate program of improvement, organizing for diagnosis of defect causes. *Prereq.* 49.382.

49.384 Advanced Quality Control (3 q.h.)

Detailed study of specialized techniques used in defect-cause diagnosis and problem analysis. Complete analysis of process capability; the multi-vari chart; pictograms; the span plan method; special emphasis on design of control plans for process quality control and special cases of product acceptance. *Prereq.* 49.383.

49.385 Principles of Material Inspection (3 q.h.)

An operating and technical-level course involving mensuration, need, and function of inspection and specifications; basic principles and techniques of measurements; various methods and equipment used for gauging and measuring; special measuring and inspection problems.

49.386 Industrial Experimentation (3 q.h.)

Modern small sample techniques are applied to industrial problems. Use of statistical inference to make estimates and set confidence intervals of key characteristics of production lots and processes; design of single- and multiple-factor experiments; tests of significance; analysis of variance. Correlation techniques; experimental design, balancing and randomizing techniques; factorial designs; nested designs; Latin square; random balance/multiple-balance. *Prereq.* 39.313.

49.387 Quality Control and Management (Intensive) (6 q.h.)

Same as 49.381 and 49.383. Not open to students who have taken those courses. *Prereq.* 39.313.

Personnel and Industrial Relations

Consultant: Prof. Christine L. Hobart, College of Business Administration (437-3257)

Associate Consultant (Industrial Labor Relations): Mr. D.F. Hurley (785-0484)

Associate Consultant (Personnel Relations): Mr. R.E. Guitarr (475-5000)

49.400 Human Relations in Organizations I (3 q.h.)

Emphasizes the expanding popularity of human relations, describing participation, formal and informal organization concepts, and leadership patterns.

49.401 Human Relations in Organizations II (3 q.h.)

Provides a review of the processes of communication, appraisal of performance, and accomplishment of change. Classes are highly participative with emphasis on case discussion as related to text material. *Prereq.* 49.400.

49.402 Human Relations in Organizations (Intensive) (6 q.h.)

Same as 49.400 and 49.401. Not open to students who have taken those courses.

49.403 Advanced Human Relations (3 q.h.)

A seminar to discuss the theories of human effectiveness. An amplification of topics surveyed in Human Relations I and II, emphasizing their practical application to present-day management of business enterprises. Reviews the implications of such theories as the managerial grid, Theory X, Y, maintenance vs. motivation. *Prereq.* 49.401 or equiv.

49.404 Personnel Management I (3 q.h.)

Organization, function, and procedures of the personnel department in relationship to the management organization; manpower selection; training; rating; personnel policies, benefits, and reports.

49.405 Personnel Management II (3 q.h.)

Principles and techniques of training, the psychology of learning, meeting training needs, principles and practices of organizing training activities. *Prereq.* 49.404.

49.406 Personnel Management III (3 q.h.)

Controlling and coordinating the managerial responsibility of supervision; planning the work; employee assignments; employee attitudes; employee grievances; administering company policies, developing work interest. *Prereq.* 49.405.

49.407 Techniques of Employee Selection (3 q.h.)

Recruitment, selection, and placement techniques including interviewing, employment testing, and examining.

49.408 Wage and Salary Administration (3 q.h.)

Wage and salary determination; merit and incentive plans; wage and salary structure; compensation methods; impact on employer-employee relations in the economy.

49.409 Employee Benefits (3 q.h.)

Private and public programs directed to job and worker income security; unemployment compensation; training and employment services; private guaranteed income; retirement pension plans and disability; group insurance.

49.410 Job Evaluation (3 q.h.)

Wage-payment systems; theory of wage determination, job elements, rating scales, writing job descriptions and specifications; selection of plans; development of wage structures and integration with the principles of merit rating.

49.411 Creative Problem Solving (3 q.h.)

New ways of thinking are learned and practiced. Sensing and analyzing problems, producing ideas, evaluating and implementing solutions. The attitudes and climate conducive to creative thinking as well as common barriers are presented. Provides methods for developing imagination, which is the key part of the creative process.

49.412 Group Dynamics I (3 q.h.)

Students explore the theoretical and practical applications of group dynamics to their current and future work situations. Outside readings, observations of groups, and journal-keeping techniques are employed to assist in class participation. Emphasis is placed upon the student as a group member, the understanding of group processes, and the individual as a change agent.

49.413 Group Dynamics II (3 q.h.)

A continuation of 49.412. *Prereq.* 49.412.

49.414 Group Dynamics III (3 q.h.)

A continuation of 49.413. *Prereq.* 49.413.

49.420 Labor Management Relations I (3 q.h.)

The origin and development of labor unions in the United States; an examination of the structure, policies, and goals of unions; the legal framework of collective bargaining including employer and union impacting on bargaining as prescribed and proscribed by the Railway Labor Act, the Labor Management Relations Act, and anti-trust restrictions; the process and issues in collective bargaining. *Prereq.* 39.303.

49.421 Labor Management Relations II (3 q.h.)

An examination of selected parts of a collective bargaining contract such as seniority, subcontracting, and union security; labor supply and demand; the impact of unions and collective bargaining; employment, wages, and income. *Prereq.* 49.420.

49.422 Labor Management Relations (Intensive) (6 q.h.)

Same as 49.420 and 49.421. Not open to students who have taken those courses. *Prereq.* 39.303.

49.423 Legal Standards for the Workplace I (3 q.h.)

Constitutional problems involving "police powers" and "due process" in the enactment of state and federal legislation as to minimum wages, hours, child labor, etc. and application of such laws; 1964 Civil Rights Act and its effect in these areas; Fair Labor Standards Act and Equal Pay Act. *Prereq.* 49.421.

49.424 Legal Standards for the Workplace II (3 q.h.)

Continuation of 49.423 with respect to the Age Discrimination Act, Occupational Safety and Health Act, Workmen's Compensation Act, Employment Compensation Act, and Social Security. *Prereq.* 49.423.

49.425 Legal Standards for the Workplace III (3 q.h.)

Emphasis on Veterans Reemployment Rights and Employee Retirement and Income Security Act; coordination and current rulings and case update of the anti-discrimination standards and rulings in terms of race, creed, color, sex, and age. *Prereq.* 49.424.

49.426 New Patterns of Collective Bargaining I (3 q.h.)

A seminar with class discussion centering on the current issues in labor management relations and the changing patterns now underway; an examination of the public interest in these changes with particular emphasis on the impact on our economy. *Prereq.* 49.421.

49.427 New Patterns of Collective Bargaining II (3 q.h.)

Continuation of the seminar focusing on selected interna-

tional industrial relations systems and comparing and contrasting such systems with that of the United States, with emphasis on changing patterns such as worker participation and codetermination. *Prereq.* 49.426.

49.428 Workshop in Labor Management Relations (3 q.h.)

Study of the special skills and knowledge in the negotiation and use of mediation and/or fact-finding in the collective bargaining agreement field and in interpreting and applying such agreements and the use of arbitration. Student participation in simulated negotiations and grievance processing. *Prereq.* 49.420, 49.421.

Business Administration Intensive Courses

41.304 Accounting Principles (Intensive) (6 q.h.)

Same as Accounting Principles I and II.

41.309 Accounting for Management Decisions (Intensive) (6 q.h.)

Same as Accounting for Management Decisions I and II. *Prereq.* 41.302.

41.404 Intermediate Accounting (Intensive) (6 q.h.)

Same as Intermediate Accounting I and II. *Prereq.* 41.302.

41.414 Auditing (Intensive) (6 q.h.)

Same as Auditing I and II. *Prereq.* 41.403.

41.421 Cost Accounting (Intensive) (6 q.h.)

Same as 41.405 and 41.406. (Not open to students who have taken those courses. *Prereq.* 41.302.

43.303 Introduction to Marketing (Intensive) (6 q.h.)

One-quarter course covering the same material found in Introduction to Marketing I and II, 43.301 and 43.302.

43.330 Advertising and Sales Promotion (Intensive) (6 q.h.)

One-quarter course covering the same material found in Advertising and Sales Promotion I and II, 43.310 and 43.311. *Prereq.* 43.302.

43.331 Sales Management (Intensive) (6 q.h.)

One-quarter course covering the same material found in Sales Management I and II, 43.322 and 43.323. *Prereq.* 43.302.

43.332 Retail Management (Intensive) (6 q.h.)

One-quarter course covering the same material found in Retail Management I and II, 43.319 and 43.320. *Prereq.* 43.302.

43.333 Salesmanship (Intensive) (6 q.h.)

One-quarter course covering the same material found in Salesmanship I and II, 43.328 and 43.329. *Prereq.* 43.302.

43.336 Marketing Management (Intensive) (6 q.h.)

One-quarter course covering the same material found in Marketing Management I and II, 43.334 and 43.335. *Prereq.* 43.302.

44.327 Personal Financial Management (Intensive) (6 q.h.)

A one-quarter course covering the same material found in Personal Financial Management I and II. *Prereq.* 44.301.

44.331 Financial Management (Intensive) (6 q.h.)

A one-quarter course covering the same material found in Financial Management I and II. *Prereq.* 44.301.

44.332 Investments (Intensive) (6 q.h.)

A one-quarter course covering the same material found in Investments I and II. *Prereq.* 44.311.

45.305 Management and Organization (Intensive) (6 q.h.)

This course combines Management and Organization I and Principles and Practices of Management into a single course offered twice a week for a single quarter. Please refer to the course descriptions for details.

45.312 Management Decisions and Policies (Intensive) (6 q.h.)

Please refer to the course description for Management Decisions and Policies, I and II. The contents of the intensive course are the same except it is presented twice per week during a single quarter. *Prereq.* 100 quarter hours.

45.325 Entrepreneurship and Small Business Management (Intensive) (6 q.h.)

Same as 45.323 and 45.324. Not open to students who have taken those courses.

45.402 Production Management and Manufacturing Systems (Intensive) (6 q.h.)

Same as 45.400 and 45.401. Not open to students who have taken those courses.

45.453 Purchasing (Intensive) (6 q.h.)

Same as 45.451 and 45.452. Not open to students who have taken those courses.

47.322 Real Estate Fundamentals (Intensive) (6 q.h.)

Same as 47.320 and 47.321. Not open to students who have taken those courses.

47.338 Real Estate Financial Analysis (Intensive) (6 q.h.)

Same as 47.328 and 47.329. (Not open to students who have taken those courses.)

49.303 Law (Intensive) (6 q.h.)

Introduction to the legal system; study of the nature, formation, and essential elements of contracts, including performance and remedies for breach. Analysis of the law of agency, including creation, rights, and duties of principal and agent, scope of authority, relationships to third persons, termination of agency.

Principles and problems associated with the following areas of business law:

Personal property—its nature and characteristics.

Sales—nature of sales and law of sales.

Landlord and tenant—respective rights and duties.

Commercial paper—negotiability, negotiations, checks and notes.

Bankruptcy—outline of federal bankruptcy, its application and administration.

Business organization—analysis of the corporation, partnerships and other forms of business organizations.

49.314 Electronic Data Processing (Intensive) (6 q.h.)

Intensifies material of EDP I and EDP II into a single quarter by doubling frequency of class meetings and pace of non-class work.

49.339 COBOL Programming (Intensive) (9 q.h.)

Intensifies material of 49.321, 49.322, and 49.323 into a single quarter by meeting twice a week for three hours per session. The pace of non-class work is also intensified. *Prereq.* 49.311.

49.375 Systems Analysis and Design (Intensive) (6 q.h.)

Same as 49.360 and 49.361. Not open to students who have taken those courses.

49.387 Quality Control and Management (Intensive)

(6 q.h.)

Same as 49.381 and 49.383. Not open to students who have taken those courses. *Prereq.* 39.313.

49.402 Human Relations in Organizations (Intensive)

(6 q.h.)

Same as 49.400 and 49.401. Not open to students who have taken those courses.

49.422 Labor Management Relations (Intensive) (6 q.h.)

Same as 49.420 and 49.421. Not open to students who have taken those courses. *Prereq.* 39.303.

51: Education-Curriculum and Instruction**51.303 Introduction to Education** (3 q.h.)

An overall consideration of education as a profession. Responsibilities of teachers and the legal basis for education in general and at various levels are developed.

51.304 The Instructional Process (3 q.h.)

A general consideration of the process of instruction including a study of various ways teaching can be analyzed and evaluated. *Prereq.* 51.303 or equiv.

51.305 Curriculum Development (3 q.h.)

Consideration of contemporary curriculum concerns. Ways in which curricula are developed will be explored. Historical precedents and the role of the leader in implementing and revising curriculum in relation to community concerns is a focus of the course. *Prereq.* 51.303 or equiv.

51.306 Methods and Materials I (3 q.h.)

A general methods course focusing on the development of instructional strategies, objectives, and procedures of evaluation as they relate to the developmental needs of students. *Prereq.* 51.305 or equiv.

51.307 Humanities Methods and Materials II (3 q.h.)

A specific methods and materials course related to the humanities. *Prereq.* 51.306 or equiv.

51.308 Social Studies Methods and Materials II (3 q.h.)

A specific methods and materials course related to the social studies. *Prereq.* 51.306 or equiv.

51.309 Student Teaching and Seminar (8 q.h.)

Full-time participation for one quarter in a University-arranged and supervised program designed to provide opportunity for the analysis of learning and teaching and for the demonstration, evaluation, and development of teaching skills. *Prereq.* Many (see page 119).

62: Boston-Bouve**62.410 Cardiovascular Health and Exercise** (1 cl., 3 lab, 3 q.h.)

A comprehensive cardiovascular medical and physical fitness evaluation including a resting 12 lead electrocardiogram, an exercise electrocardiogram, resting and exercise blood pressure, an aerobic work capacity evaluation, a pulmonary function test, blood lipid profile, cardiovascular medical examination, coronary risk factor profile and medical history, test of body composition, and tests of muscular strength, endurance, and flexibility. Individual exercise programs will be prescribed based on test results and included in a structured exercise and jogging class three days per week. A weekly cardiovascular health and exercise lecture will be conducted.

63: Therapeutic Recreation Services**63.301 Principles and Practices of Therapeutic Recreation I** (3 q.h.)

Overview of the field, including rationale, history, philosophy, goals, treatment settings, problems of institutionalization, sexual role demands, loss of human dignity, adjunctive therapies, and professional development in therapeutic recreation. Course will conclude with introduction of case method. *Prereq.* 30.304 or 30.305 (or taken concurrently).

63.302 Principles and Practices of Therapeutic Recreation II (3 q.h.)

Basic medical terminology and in-depth orientation to sensory, neurological, orthopedic and cardiovascular disabilities, prosthetics, and orthotics. A study of attitudinal and societal barriers to the handicapped. *Prereq.* 63.301 or equiv.

63.303 Principles and Practices of Therapeutic Recreation III (3 q.h.)

Integrated case method approach to understanding the diversified needs of the person who is handicapped. Psychological, sociological, and emotional impact of disabilities. Designing of individual and group activity. Planning, charting, adapting, and evaluating programs. *Prereq.* 63.302 or equiv.

63.304 Group Dynamics and Leadership I (3 q.h.)

Self-awareness, identity, interpersonal and intergroup communications. The group process: factors influencing the need to join the group, motivation to participate, membership screening, size, purpose, behavior patterns, developing rapport, open-ended and closed approaches, group problem-solving, brainstorming, conflict resolution.

63.305 Group Dynamics and Leadership II (3 q.h.)

Organization, development, and structure of groups, team building, role and value clarification, ramifications of change, characteristics and styles of leadership. *Prereq.* 63.304 or equiv.

63.306 Group Dynamics and Leadership (Intensive)

(6 q.h.)

Equivalent to 63.304 and 63.305.

63.310 Field Practicum I (4 q.h.)

Assigned field experience in a treatment facility under supervision of a qualified professional. Student has the opportunity to learn about the direct service application of classroom

theory through observation and participation in conjunction with written reports, evaluation, and seminars. The experience averages eight hours a week for twelve weeks. *Prereq.* 63.303, plus 12 q.h. of professional courses and permission of consultant.

63.311 Field Practicum II (4 q.h.)

Continuation of 63.310. *Prereq.* 63.310.

63.315 Independent Study (4 q.h.)

Empirical research project geared to the individual's area of professional focus. The student is expected to gather, analyze, and evaluate original data and periodically submit progress reports to research adviser. *Prereq.* 63.303 plus permission of consultant.

63.316 Independent Study (4 q.h.)

Continuation of 63.315. *Prereq.* 63.315 or equiv.

63.321 Social Recreation (3 q.h.)

Planning and motivation for social recreation activities; ice breakers, mixers, active and inactive games, adapting and creating joint projects, special events.

63.322 Music Therapy (3 q.h.)

An introduction to the field of music therapy including an exploration of the historical and current theories and various contemporary techniques and their uses in various clinical settings. The course will include a survey of the literature of therapy with special education, psychiatric, and geriatric areas.

63.323 Arts and Crafts I (3 q.h.)

Overview of the creative media available for individual projects. Development of the technical capability to utilize a wide variety of materials in imaginative ways. Compilation of personal arts and crafts manual as reference tool.

63.324 Arts and Crafts II (3 q.h.)

Adaptation of creative skills to a therapeutic setting. Developing flexibility and sensitivity to the client's personal needs and interests so that innovative craft projects are designed to meet needs and to maximize their therapeutic benefits. *Prereq.* 63.323 or equiv.

63.325 Arts and Crafts (Intensive) (6 q.h.)

The equivalent of 63.323 and 63.324.

63.326 Media Resources and Techniques (3 q.h.)

Designing overlays, transparencies, posters, brochures, and other materials. Use of slides and tapes. Learning the operation of P.A. systems, the 16 mm, opaque film strips and overhead projectors, and other photographic devices.

63.327 Therapeutic Use of Dramatics (3 q.h.)

Reinforcement and socialization through pantomime, improvisations, puppetry, skits and stunts, dramatic games, storytelling, one-act plays with emphasis on creativity in the therapeutic setting.

63.330 The Process of Aging (3 q.h.)

The psycho-social dynamics of growing old, physical changes as a result of aging, needs of elderly people, attitudes toward work, retirement, and leisure. A study of dependency, remotivation, death and dying, as well as programs and services which add quality to the long life.

63.331 The Nursing Home Experience (3 q.h.)

Exchange of empirical data relating to case experiences and institutional procedures encountered by activity leaders and other practitioners in nursing homes. Feasibility of functional innovations will be discussed in relation to present practices.

63.332 Therapeutic Recreation in Rehabilitation (3 q.h.)

Philosophy, goals, and background in rehabilitation and team membership concepts. The role of therapeutic recreation in the acute and chronic hospital, the rehabilitation center, and various community settings.

63.333 Therapeutic Recreation in Corrections (3 q.h.)

A study of penal institutions, their goals, practices, and the inmate population. The actual and potential role of therapeutic recreation in various correctional settings.

63.334 Camping for the Disabled (3 q.h.)

Basic goals, processes, and considerations of camping for this special population. Emphasis on social integration with non-handicapped children. If conducted in the summer session, most classes will be held at the Warren Center in Ashland for more contact with the campers and Warren program which is jointly sponsored by the Easter Seal Society of Massachusetts and the Recreation and Leisure Studies Department of Boston-Bouvé College.

63.335 Activity and Movement Analysis (3 q.h.)

Basic anatomy as it relates to the identification of muscle groups involved in action. Analysis of both the movement and the ingredients of the activity and their suitability with given disabilities.

63.336 Mental Illness and Retardation (3 q.h.)

The origins, manifestations, and treatment approaches for mental illness and retardation are explored in this course. Historical and contemporary overviews include treatment settings, case studies, and trends in mental illness and retardation.

63.337 Therapeutic Recreation in Child Development

(3 q.h.)

Growth and development patterns, diagnosing early childhood abnormalities; study of the need for play, learning through play, therapeutic values of play, social ethics, safety considerations, and others.

63.340 Leisure Counseling (3 q.h.)

Remedial and developmental process designed to produce behavioral and attitudinal changes in the leisure use patterns of the client. Development of competence in identification, utilization, and referral to appropriate recreational resources. Awareness of cross-cultural recreation patterns. Leisure counseling fundamentals compared in a variety of recreational settings. *Prereq.* 63.303 or one year professional experience.

63.341 Humanistic Approaches to Recreational Therapy: Noncompetitive and Intergenerational (3 q.h.) (formerly "Eclectic Approaches to Client Treatment")

This course will provide students with a concrete understanding of the use of trust, imagination, verbal/non verbal communication, and creative thinking in working with children, senior citizens, and adults of all ages. Designed to increase the student's personal growth, a large variety of

behavioral methods will be explored, including: remotivation and reality therapy, the creative arts, intergenerational programming, the group process, motor coordination, sensory awareness, and success-oriented/self-responsibility program development.

63.343 Community Recreation for the Handicapped (3 q.h.)

Developing and initiating a comprehensive special needs program in the community. Integrating efforts with school and special education departments, municipal officials, and parent groups. Need statements, concepts of budgeting and funding, publicity, program awareness and support, and actual presentation of integrative and special programs to be included. Site visitations are an integral part of the course.

73: Pharmacy and Allied Health Professions

73.316 Pharmacodynamics (2 q.h.)

A course for registered nurses. Introductory expositions of pharmacologic principles with the pharmacotherapeutics of drug groups and individual drug substances of particular importance in treatment and diagnosis of disease.

86, 87: Health Professions Programs

The following courses are open to all Health Professions students:

86.300 Medical Terminology Survey (3 q.h.)

An introductory survey to Medical Terminology. Not open to medical record students. *Prereq. Courses in Anatomy and Physiology.*

86.301 Medical Terminology I (2 q.h.)

An intensive introduction to medical terminology including stems, prefixes, and suffixes. Practice in usage. *Prereq. Courses in Anatomy and Physiology.*

86.302 Medical Terminology II (2 q.h.)

A more extensive and in-depth consideration of medical terminology. Intended for the medical records specialist. *Prereq. 86.301.*

86.303 Foundations of Medical Science I (3 q.h.)

Study of major disease problems in our society and modes of treatment. Discusses organized care, diagnosis, and treatment. Topical emphasis on reproduction, birth, and pediatrics. *Prereq. Course in Anatomy and Physiology.*

86.304 Foundations of Medical Science II (3 q.h.)

A continuation of 86.303, emphasizing dental health, dermatology, heart disease, cancer, stroke, blood and lymphatic diseases, accidents, musculo-skeletal, respiratory, and gastro-intestinal diseases. *Prereq. 86.303.*

86.305 Health Science Statistics (3 q.h.)

A course designed to give the opportunity to the health practitioner to learn the application of basic statistical techniques to be utilized in gathering, displaying, and interpreting health data. The principles of research design are considered. Agencies involved in collecting statistical data will be reviewed. *Prereq. Basic Statistical course or permission of instructor.*

86.306 Hospital Law and Ethics (formerly 86.502) (3 q.h.)

A study of important legal principles and rulings of impor-

ance to medical administrative personnel and others. Brief introduction to interpersonal ethics in patient care.

86.307 Hospital Organization and Management I (formerly 86.581) (3 q.h.)

Examination and use of general management concepts in a health care context. Case method used to explore marketing, human behavior in organizations, managerial economics, production and operations management, environmental analyses, and policy problems of professional service organizations.

86.308 Hospital Organization and Management II (formerly 86.582) (3 q.h.)

Continuation of first quarter with emphasis on organizational issues and developmental use of long range planning framework which ties previous areas together. Case method utilized. *Prereq. 86.307.*

86.310, 86.311 Applied Health Care Management I, II (formerly 87.509, 87.510, 87.511) (6 q.h.)

Practical application of management principles in health care agencies. Students will examine potential problem areas in health care management settings in order to plan strategies to develop, implement, and evaluate job tasks for an efficient work environment.

86.312 Communications for Health Care Personnel I (formerly 86.601) (3 q.h.)

A two-part course blending the demands of careful interviewing techniques, thorough record keeping, and accurate and articulate health correspondence. Emphasis placed on effective interaction between patients and health personnel, and between health workers and staff members of health agencies. Deals with the means of effecting good communicative skills with community resources for the benefit of patients.

86.313 Communications for Health Care Personnel II (formerly 86.602) (3 q.h.)

Continuation of 86.312. *Prereq. 86.312 or permission of instructor.*

86.320 Principles and Practices of Community Health I (3 q.h.)

An overview of specialized health care facilities and their impact on health care delivery, including special focus on ambulatory care, neighborhood health centers, HMO's and other developing modalities.

86.321 Principles and Practices of Community Health II (3 q.h.)

Continuation of 86.320 with emphasis on innovative approaches to meeting and responding to community health needs. *Prereq. 86.320.*

86.322 Principles and Practices of Community Mental Health (formerly 86.516) (3 q.h.)

An introduction to the basic principles and techniques of modern mental health practice.

86.323 Public Health I (formerly 86.521) (3 q.h.)

Principles of public health. Organization of health agencies and services.

86.324 Public Health II (formerly 86.522) (3 q.h.)

Continuation of 86.323, emphasizing community organization for health services.

86.325 Health Care Delivery (3 q.h.)

A survey course dealing with current and future problems in health delivery.

86.326, 86.327 Contemporary and Controversial Health Care Issues I, II (formerly 86.545, 86.546) (6 q.h.)

A survey of contemporary health topics. Timely issues are analyzed to differentiate fact and opinion. The course is designed for individuals desiring authentic information on current health matters. General and mental health topics will be covered.

86.328 Home Health Care (formerly 86.515) (3 q.h.)

A course designed to cover all aspects of providing effective community home health care, and the impact of these programs on the health care delivery system.

86.329 Environmental Problems & Health (formerly 86.531) (3 q.h.)

A survey of environmental conditions in land, air, and water. The causes of pollution; effects of man and other life; and a general discussion of current control methods. Particular emphasis on the significance of environmental problems to the individual.

86.330 Health Science Education I (3 q.h.)

Introduction to program planning and the development of educational objectives with special focus on the use and process of evaluating objectives. Presentation of teaching strategies for the professional practitioner.

86.331 Health Science Education II (3 q.h.)

Continuation of 86.330 with emphasis on the use of the media and the design of learning packages in health education. *Prereq.* 86.330.

86.332 Methods and Materials in Public Health Education (formerly 86.524) (3 q.h.)

An introduction to health education in the public health context. *Prereq.* *Public Health course or permission of instructor.*

86.333 Medical Care and Current Social Problems I (3 q.h.)

Seminar course discussing society's organization to deliver medical care services. *Prereq.* 86.327 or *equiv.*

86.334 Medical Care and Current Social Problems II (3 q.h.)

A continuation of 86.333 discussing topics identified in the first part of the course as matters of great concern in the field of medical care. *Prereq.* 86.333.

86.337 Oral Microbiology (formerly 86.535 and 86.536) (3 q.h.)

The qualitative and quantitative composition of the microbiota inhabiting the various ecologic niches of the oral cavity. Methods which have been used to study the oral microbiota are critically evaluated. Ecologic factors such as adhesion, growth factors, and physico-chemical environment controlling the establishment of colonization of organisms in such

sites are discussed in detail. The pathogenic potential of plaque microorganisms in terms of caries, periodontal disease, and mixed anaerobic infections will be evaluated. *Prereq.* *Chemistry, Microbiology I.*

86.338 Advanced Periodontology I (formerly 86.537) (3 q.h.)

The structure of the periodontal tissues at both a light and electron microscope level will be discussed. Particular attention is paid to the vascular and cellular changes in inflammation. Consideration of the physiological and chemical basis of the observed differences in pathological and nonpathological processes is examined extensively with emphasis on the dynamics of these changes. *Prereq.* *Anatomy and Physiology, Chemistry, Pathology.*

86.339 Advanced Periodontology II (3 q.h.)

The etiologic factors responsible for the pathological alterations discussed in part one will be examined. Attempts to correlate experimental animal findings with the human clinical situation. Methods of diagnosis, treatment planning, and treatment, as well as approaches to the evaluation of therapeutic efficacy are discussed. Stress is placed on relating modern concepts of etiology to alterations in approach to therapy. *Prereq.* 86.338.

86.340 Long Term Care Administration I (formerly 86.571) (3 q.h.)

The organization of care for the long-term acute and chronically ill patient. Goals and purposes of types of long term care facilities. Budgeting, financing, administration and services.

86.341 Long Term Care Administration II (formerly 86.572) (3 q.h.)

Nursing units; role of the physician. Nursing home-hospital relationships. Therapies. Social Work. *Prereq.* 86.340 or *equiv.*

86.342 Long Term Care Administration III (formerly 86.573) (3 q.h.)

Design of long-term care facilities, capital funding, staffing, budgeting, public relations. *Prereq.* 86.341 or *equiv.*

86.343 Long Term Care Administration IV (formerly 86.577) (3 q.h.)

The nature and problems of aging; individual and social considerations. *Prereq.* 86.342 or *equiv.*

86.344 Long Term Care Administration V (formerly 86.578) (3 q.h.)

The care of elderly patients in home, community, and institutions. *Prereq.* 86.343 or *equiv.*

86.345 Long Term Care Administration VI (formerly 86.579) (3 q.h.)

Seminar course on the provision and improvement of services to the elderly. *Prereq.* 86.344 or *equiv.*

86.346 Advanced Health Care Nutrition (3 q.h.)

Food chemistry, nutrition and physiology as applied to diet. Recent developments in normal nutrition. A critical review of the literature with emphasis on the experimental data on which the principles of human nutrition are based. Emphasis

on the concept for people of all ages. *Prereq. Basic Nutrition course.*

86.347 Advanced Pharmacology (3 q.h.)

Available for students who have completed 86.381 or its equivalent.

86.348 Health Care Financing I (3 q.h.)

Introduction to health care accounting, control and finance, including third party reimbursement of hospitals. *Prereq. 41.302.*

86.349 Health Care Financing II (3 q.h.)

Continuation of first quarter course including a four-step process for control (planning, programming, budgeting, and control) and financial issues (capital budgeting, cash budgeting) and other financial analyses.

The following courses are offered by Art and Sciences and Business Administration and are available to health profession students:

39.341 Medical Economics (3 q.h.)

Examination and discussion of the following topics: health care trends in the United States; causes of increases in medical care costs; supply and training of health care personnel; the nation's need for physicians, nurses, pharmacists and other allied health personnel; the quality of medical care; economics of health insurance plans; consumer demand for health care, medical facilities, professional personnel and semi-professional personnel.

49.373 Information Processing in Medicine (formerly 45.697) (3 q.h.)

A non-technical survey of the importance and potential of computers in medicine: medical records; clinical reporting systems; automated laboratories; on-line monitoring; research needs; medical administration requirements. Analysis of the content and interactions of medical information sub-systems. Implications of computerization of various medical activities; equipment selection; organizational considerations. (Offered odd-dated years) (Available in Boston only) *Prereq. 49.310 or 49.314.*

The following courses are open to Medical Record Students only:

86.370 Medical Record Science I (formerly 86.554)

(6 q.h.)

Introduction to medical records; history of the medical record, and medical record forms. A study of the professional medical record administrator and his/her relationship to the health facility. A study of the numbering, filing, and security of medical records. Quantitative analysis of the record is stressed; didactic and laboratory experiences incorporated. *Prereq. 80 q.h. of credit including 18.424, 18.425, 18.426, 86.301, 86.302.*

86.371 Medical Record Science II (formerly 86.555)

(6 q.h.)

Principles of law as related to patient care and medical records. Rules of privileged communication and the release of information to agencies are stressed. Medical staff and committees are covered. Accreditation regulations are con-

sidered; didactic and laboratory experiences incorporated. *Prereq. 86.370.*

86.372 Medical Record Science III (formerly 86.556)

(6 q.h.)

Study of the basic principle for compiling statistics for hospital and health facilities. Preparation of reports and vital statistic reporting are taught. Classification theory and the principles of disease coding are covered. Special indexes are reviewed; didactic and laboratory experience incorporated. *Prereq. 86.371.*

86.353 Organization of the Medical Record Department I (3 q.h.)

The study of the hospital, patterns of organization, lines of responsibility and authority, medical staff and administrative organization, departmental functions, and organization. The planning aspects of management and the study of fundamental principles and successful practices in getting office work accomplished are stressed. *Prereq. 86.372.*

86.354 Organization of the Medical Record Department II (3 q.h.)

Office management problems and their solution, conceptive framework for the operation of essential management function, facilities, solutions, and contributions to the office. The study of the controlling function in the Medical Record Department. Quality control, time standards, cash controlling, budgeting and office manuals. Work simplification and systems as it applies to the Medical Record Department. *Prereq. 86.353.*

86.373 Medical Record Science IV (formerly 86.557)

(6 q.h.)

A study of health care legislation, quality assurance, utilization review, PSRO's, planning agencies and their impact on record management; an introduction to specialized record systems; didactic and laboratory experiences incorporated. *Prereq. 86.372.*

86.374 Medical Record Science V (formerly 86.558)

(6 q.h.)

Specialized record systems continued. Topics include ambulatory care, home care, and long-term care. These topics are approached in terms of information management and quality assurance. Discussion of new problems presented by changing patterns in health care delivery. Review of current literature. *Prereq. 86.373.*

86.358 Medical Record Computer Science (formerly 86.585) (3 q.h.)

Electronic data processing applications in the medical record environment. The study of the hospital information system. Application of computers in hospital methodology and assessing the need for EDP in medical record environment. Trends in the state of the art and future prospects for medical record management. *Prereq. 49.310, 86.374.*

86.375 Applied Medical Record Science I (2 q.h.)

Clinical practice in medical record science and management techniques at one or more of the affiliated hospitals.

86.360 Applied Medical Record Science II (formerly 86.587) (3 q.h.)

Clinical practice in medical record science and management

techniques at one or more of the affiliated hospitals and health facilities.

86.376 Applied Medical Record Science III (formerly 86.588) (3 q.h.)

Clinical practice in medical record science and management techniques at one or more of the affiliated hospitals.

86.362 Hospital Management for Medical Record Administrators (3 q.h.)

An introduction to the basic management principles designed so that the health care facility will be the major source of example and case study (for Medical Record students only).

86.363 Special Topics in the Health Professions I (3 q.h.)

Independent study course to enable the student in health science, health management and health records to focus on areas of special relevance to his/her professional goals. Materials will be developed with the aid of a faculty adviser to reflect the student's special background and needs. Arrangements should be made with the faculty adviser prior to registration for the course. Not open to Medical Laboratory Science students.

86.364 Special Topics in the Health Professions II (3 q.h.)

A continuation of 86.363. Not open to Medical Laboratory Science students.

86.365 Special Topics in the Health Professions III (3 q.h.)

A continuation of 86.364. Not open to Medical Laboratory Science students.

86.366 Special Topics in Health Professions IV (3 q.h.)

A continuation of 86.365. Not open to Medical Laboratory Science students.

86.380 Basic Nutrition (3 q.h.)

This course is for students in the health field enrolled in their first nutrition course. The course will provide an overview of nutrition as a young, growing science. The course's focus will be on current basic scientific knowledge of nutrition and how this knowledge can be applied to guide an individual toward making appropriate food choices. It is assumed the student will possess a high school background in chemistry and biology.

86.381 Basic Pharmacology (3 q.h.)

The major purpose of this introductory course is to supply sound and current knowledge of the major classes of drugs. Wherever possible, a presentation of the mode of action, common side effects, dosage, pharmaceutical forms, rate and route of administration, and known interactions and toxicities will be made of the most commonly and currently used drugs to treat certain diseases or specific signs and symptoms. *Prereq. chemistry, anatomy, and physiology, or permission of instructor.*

The following courses are open to Radiologic Technology students only:

86.420 Radiologic Technology Orientation I (3 cl., 3 q.h.)

A study of the history of x-radiation, radiology department organization, medical terminology, patient care and nursing procedures, and contrast media.

86.421 Radiologic Technology Orientation II (3 cl., 3 q.h.)

A study of in-depth nursing procedures relative to radiology; medical and surgical diseases; equipment maintenance and testing. *Prereq. 86.420.*

86.424 Principles of Radiology I (4 cl., 4 q.h.)

A study of practical, basic radiation protection; film processing and principles of positioning patient for radiographic studies.

86.425 Principles of Radiology II (4 cl., 4 q.h.)

A continued study of the body positioning for detailed radiograph examination. A study of the principles of precise body positioning for detailed radiographic studies. *Prereq. 86.424.*

86.422 Radiologic Science I (4 cl., 4 q.h.)

A survey of the basic concepts of physics, units of measurement; Newton's law of motion; work; energy; atomic theory of matter; electric currents; magnetism; generators; motor production; control of high voltage and x-ray production. *Prereq. 10.527 or equiv.*

86.423 Radiologic Science II (4 cl., 4 q.h.)

Interaction of x-rays and matter, modern x-ray tubes, x-ray circuits, simulator experiments, Newton's laws of motion; fluoroscopic systems; properties of solids, liquids, and gases. Temperature and heat transfer and their application. *Prereq. 86.422.*

86.426 Radiologic Photography and Exposure I (4 cl., 4 q.h.)

A study of the basic principles of image formation; electromagnetic spectrum; circuits used in radiology; x-ray tube construction; factors controlling radiographic quality; and contrast materials in visualizing areas and organs of the body. *Prereq. 10.527 or equiv.*

86.427 Radiologic Photography and Exposure II (4 cl., 4 q.h.)

A study of accessory items used to improve radiographic quality; in-depth methods of protection for patient and personnel; film critique and mathematical exposure concepts. *Prereq. 86.426 and 86.422.*

86.434 Advanced Radiologic Technology I (3 cl., 3 q.h.)

A study of special procedures involving Computerized Axial Tomography, cardiac vascular procedures, neuroradiology, lymphangiography, and other related procedures. *Prereq. Core curriculum in Radiologic Technology or its equiv.*

86.435 Advanced Radiologic Technology II (3 cl., 3 q.h.)

A continued study of special procedures involving mammography, thermography, xerography, and ultrasound. *Prereq. 86.434.*

86.436 Radioactive Isotopes (3 cl., 3 q.h.)

Mathematical concepts, physics, dosimetry, protection, radionuclide chemistry, radiopharmaceuticals, biochemistry, equipment, positioning, clinical applications.

86.437 Radiation Therapy (3 cl., 3 q.h.)

A study of the rationale of therapy, equipment, radiation characteristics, basic radiology, biochemistry, treatment

planning, protection, and basic principles of clinical radiotherapy.

86.460, 86.461, 86.462, 86.463 Radiology Practicum (12 q.h.)

Application of theoretical principles presented at the University by performing radiographic procedures under supervision. Assigned homework to be part of lesson plans received while at the hospital, and lectures presented at the hospital and University. A.M.A. requirement minimum 2 hrs./week.

Medical Laboratory Science courses open to all students:

87.300 Medical Laboratory Science Orientation (2 q.h.)

Scope, responsibilities, opportunities, and educational requirements for the medical laboratory science professions.

87.301 Quality Control (3 q.h.)

The development of quality control programs in each medical laboratory specialty. Applications of statistical methods to medical laboratory quality control programs.

87.302 Basic MLS Electronics and Instrumentation (formerly 87.504) (2 q.h.)

A course in electricity with coverage through introductory electronic circuits. Emphasis directed to medical laboratory instrumentation and related electrical processes of measurement.

87.303 Seminar in Medical Technology (formerly 87.540) (3 q.h.)

Current topics in medical technology. Required readings and presentations by students. Guest lecturers. *Prereq. Permission of instructor.*

87.310 Hematology (formerly 87.541) (1 cl., 3 lab., 3 q.h.)

Basic hematological techniques including discussion of the differential smear and observation of the normal morphology of human red cells, white cells, and platelets. *Prereq. 18.412 or equiv.* (Laboratory fee) (Not for Medical Technology or Hematology majors)

87.311 Morphologic Hematology I (formerly 87.542) (1 cl., 3 lab., 3 q.h.)

Morphologic and etiologic classification of the anemias. Related diagnostic tests will be discussed. *Prereq. 87.310 or equiv.* (Laboratory fee)

87.312 Morphologic Hematology II (formerly 87.543) (1 cl., 3 lab., 3 q.h.)

Studies of pathologic and physiologic deviations of the white cell series as observed in leukemias and infections. Some animal hematology is included. *Prereq. 87.311 or equiv.* (Laboratory fee)

87.313 Epidemiology I (formerly 87.544) (3 q.h.)

Basic concepts in epidemiology. The distribution in determinants of diseases and injuries in human populations. Descriptive and analytical epidemiology studies will be included.

87.314 Epidemiology II (formerly 87.545) (3 q.h.)

Study of the microbiological distributions in determinants of infectious diseases. Hospital epidemiology. *Prereq. 18.421 and 87.313.*

The following courses are open to Medical Laboratory Science students only:

*Courses offered in the evening at day college tuition rates.

***87.101 Basic Medical Laboratory Science** (3 cl., 4 lab., 4 q.h.)

This is an introductory course in basic medical laboratory science including methods, principles, and theories and includes urinalysis and basic hematology. *Prereq. 8 q.h. of college biology and chemistry.*

***87.102 Basic Medical Laboratory Hematology** (1 cl., 3 lab., 2 q.h.)

Principles and procedures of basic coagulation and blood cell morphology. *Prereq. 87.101.*

***87.103 Basic Medical Laboratory Immunohematology** (1 cl., 3 lab., 2 q.h.)

Basic principles in immunohematology and related techniques with particular emphasis on those procedures used in blood banking. *Prereq. 8 q.h. of college biology and chemistry.*

***87.104 Basic Medical Laboratory Clinical Microbiology** (3 cl., 3 lab., 4 q.h.)

Basic principles and techniques of organism isolation; cultivation and identification of staphylococci, streptococci, enterobacteria, and neisseria. Clinical specimens will be examined and identification schema developed. *Prereq. 87.101 and quarters of college biology.*

***87.105 Basic Medical Laboratory Science Chemistry and Instrumentation** (3 cl., 3 lab., 4 q.h.)

Principles, procedures, and techniques of basic clinical chemistry and instrumentation. *Prereq. 87.101 and 12.427.*

***87.211 Hemostasis** (1 cl., 3 lab., 2 q.h.)

Advanced studies in the hemostatic mechanisms. Platelet function analyses, identification of factor deficient samples, and problem-solving situations.

***87.213 Immunohematology** (1 cl., 3 lab., 2 q.h.)

Advanced studies in antigen-antibody detection and problem solving of immunohematological tests. Discussion of related hematologic disorders. *Prereq. 87.103 or 87.153.*

***87.222 Histochemistry** (1 cl., 3 lab., 2 q.h.)

The use of histochemistry stains to differentiate among various hematologic disease. Stains to include peroxidase, sudan black B, NBT, esterases and immunofluorescence. *Prereq. 87.312 or 87.252.*

Courses open to Cytotechnology students only:

A special tuition rate of \$75 per credit applies to the following cytotechnology courses.

87.508 Introduction to Cytotechnology (2 cl., 2 q.h.)

A review of cell structure, principles of microscopy, and staining techniques. Anatomy and physiology of the female reproduction system and study of the non-malignant cytology of the female genital tract. (Laboratory fee)

87.528 Cytopathology I (2 cl., 2 q.h.)

Cytopathology and clinical aspects of cervical dysplasia,

carcinoma-in situ, and invasive squamous cell carcinoma. Consideration of endometrial and endo-cervical carcinoma, other genital tract cancers, and radiation effect. *Prereq.* 87.508. (Laboratory fee).

87.538 Cytopathology II (2 cl., 2 q.h.)

Benign and malignant cytology of the respiratory and gastrointestinal systems correlated with the anatomy and physiology. Considerations of clinical aspects. Special collection techniques. Emphasis on cancer of the lung and stomach. *Prereq.* 87.528.

87.558 Cytopathology III (2 cl., 2 q.h.)

Study of benign, atypical, and malignant cells exfoliated from various portions of the urinary tract, in serious effusion, cerebrospinal fluid, and breast secretions. *Prereq.* 87.538.

87.518 Applied Cytology I (at Hospital) (4 q.h.)

The microscopic evaluation and screening of benign cytological smears and smears from cervical dysplasia, carcinoma-in-situ, invasive malignant tumors of the female genital tract.

87.548 Applied Cytology II (at Hospital) (4 q.h.)

The microscopic evaluation and screening of cytological smears from the respiratory tract, gastrointestinal tract, urinary tract, and from body fluids. Continuing evaluation of cytological smears from the gynecological tract.

87.578 Applied Cytology III (at Hospital) (4 q.h.)

The microscopic evaluation and screening of cytological smears from all parts of the body. Practical experience in genetic cytology.

87.618 Applied Cytology IV (at Hospital) (2 q.h.)

The microscopic evaluation and screening of cytological smears from various body sites. Effects of radiation and of chemotherapy; diagnosis of suspicious and hormonal conditions; cytological observations in pregnancy; their clinical significance.

87.568 Cytogenetics and New Concepts (2 cl., 2 q.h.)

Clinical and cytological aspects of genetics, including genetic counseling. Special uses of cytology. Cell research techniques, cancer. Epidemiology and current concepts related to cytotechnology. *Prereq.* 87.558 or permission of instructor. (Laboratory fee.)

87.598 Special Topics (2 cl 2 q.h.)

Special projects in cytology, cytopathology, or cytotechnology investigated or reviewed and reported by student. Written and oral presentation required. *Prereq.* 87.558 or permission of instructor.

87.608 Seminar: Cytopathology—Criteria and Correlations (4 cl., 2 q.h.)

Presentation, discussion, and interpretation of benign, suspicious, and hormonal conditions. The cytological diagnostic criteria of malignant tumors from various body sites and their histopathological correlation.

90:Career Development

Self-Assessment and Career Development

90.401 Self-Assessment and Career Development I (3 q.h.)

Understanding the concept of life/career planning and its practical implications for future education and/or work. Students complete a self-assessment, including an evaluation of their competencies and skills, and receive training in career decision making with practice in the use of field survey techniques to test their interest in specific career areas. An overview of job campaigning, including an introduction to resumé preparation and interviewing techniques.

90.402 Self-Assessment and Career Development II (3 q.h.)

An expanded understanding of life/career planning. Intensive practice in several job campaign skills including: resumé building, interviewing for information, networking, and interviewing for a job. Students can become aware of how these and other job campaign strategies can be used to map an individual approach to career development. Emphasis is placed on the relationship of strategic career decisions to life planning, in terms of both short-term and long-term goal development.

Core Career Courses for Women

These courses are available on an open and equal opportunity basis to all students who wish to enroll.

90.301 Career Management I (3 q.h.)

Basic approaches to competence appraisal, opportunity analysis, and job development strategies. Learning how to design personal success patterns through skill identification and clustering. Additional perspective on the methods of increasing career potential will be gained through exercises in communication and group process. Resumé construction will be introduced.

90.302 Career Management II (3 q.h.)

Allows the student to develop the skills and strategies to reach career goals through field survey practices, case research, and creative problem solving. Skills include: data collecting, detailed instruction in resumé building, initiative, decision making, interviewing, making oral presentations, and brainstorming. *Prereq.* 90.301 or equiv.

90.305 Women's Management Dynamics I: Structural and Behavioral Fundamentals (3 q.h.)

Identification of effective management practices and the inhibiting factors that impede women from acquiring them. The importance of effective communication and dealing with criticism will be stressed. Validity of common behavioral assumptions will be tested, including women's fears of success, inadequate motivation, social exclusion, disinclination to take charge or withstand pressure.

90.306 Women's Management Dynamics II: Leadership and Communication (3 q.h.)

The dynamics of leadership as they relate to the successful woman manager: managing conflict, securing control, instituting change, motivating, disciplining, and gaining staff respect. Distinguishing supervisory from management performance standards. Role playing and case studies will be used to assist in the development of leadership and problem solving capabilities. *Prereq.* 90.305 or equiv.

90.308 Women's Management (Intensive) (6 q.h.)

The equivalent of 90.305 and 90.306.

90.310 The Elements of Management (3 q.h.)

Provides a knowledge base in the technical, quantitative, and specialized areas of management. Familiarizes the student with the language and operational complexities of the manager's job and raises her level of diagnostic, analytic, and integrating competence. The course is divided into four, three-week modules: Module I: Economics and Finance; Module II: Budget and Accounting; Module III: Marketing; Module IV: Information Systems.

94: Law Enforcement**94.301 Human Rights in Corrections** (3 q.h.)

Consideration of the special practices and problems in the protection of human rights in the institutional environment; legal and practical aspects.

94.302 Basic Statistics in Law Enforcement (3 q.h.)

Introduction to basic statistical information procedures and operations relating to law enforcement areas; interpretation of criminal statistics; crime rates; unrecognized crime, non-reporting; recidivists' rates; individual statistics; evaluation of records; research and data on specialized services.

94.303 Correctional Counseling (3 q.h.)

Basic concepts and principles of counseling; individual and group therapy carried on in the correctional field and institutional services; case study and projects.

94.304 Criminal Investigation and Case Preparation I (3 q.h.)

General investigation techniques; collection and preservation of evidence and information; consideration of particular crimes, including arson, sexual offenses, larceny, burglary, robbery, forgery, and homicide.

94.305 Criminal Investigation and Case Preparation II (3 q.h.)

Conduct of raids; surveillance and undercover operations; methods of preparing a case for court; specialized scientific methods; exercises involving techniques of prosecution and cross-examination. *Prereq.* 94.304.

94.306 Comparative Police Systems (3 q.h.)

A study of existing police systems in other jurisdictions; examination of the organization, administration and practices in police agencies in the United States, Europe, and the United Kingdom.

94.307 Introduction to Industrial Security (3 q.h.)

The historical, philosophical, and legal basis of security; a survey of administrative, personnel, and physical aspects of the security field.

94.308 Interviews and Interrogations I (3 q.h.)

Interviewing of victims, witnesses, informants, and complainants; demonstration, study, discussion, and practice of techniques and procedures.

94.309 Interviews and Interrogations II (3 q.h.)

Techniques for legally acceptable questioning of suspects and persons in custody; laws governing interrogation practices; demonstrations, class exercises and assigned projects. *Prereq.* 94.308.

94.311 Advanced Correctional Practices I (3 q.h.)

Diagnosis and treatment of the drug addict and the alcoholic offender at both juvenile and adult levels; a study of these and related kinds of personal self-abuse as to causation and treatment.

94.312 Advanced Correctional Practices II (3 q.h.)

Case studies of persons confined; their past and present environment and relationship; consideration of purposeful resolves or regressions. A study and evaluation of correction-psychiatric facilities for the disordered offender, including the aggressive, the assaultive, and the violent subject. *Prereq.* 94.311.

94.314 Traffic Safety and Control I (3 q.h.)

A study of the state of the art of highway safety; research; traffic accident investigation; prevention; rescue, automated system of vehicular traffic accident and moving violation data collection; analysis and utilization; speed control; speed zoning techniques; radar; vascar; laws, rules, and regulations.

94.315 Traffic Safety and Control II (3 q.h.)

An in-depth study of traffic law enforcement, techniques of selective enforcement; traffic surveys; engineering, safety education, and evaluation of current traffic programs. *Prereq.* 94.314.

94.316 The Law and Institutional Treatment (3 q.h.)

The process of law from arrest of offender through release in its relation to correctional principles and practices; functions of police, defense, prosecution, and courts; legal documents related to commitment.

94.317 Comparative Correctional Systems (3 q.h.)

A study of correctional systems and methods in selected jurisdictions; examination of the organization, administration, and practices in the United States and foreign countries.

94.318 Law Enforcement Identification and Records I (3 q.h.)

Records and systems and utilization; survey of forms, files, procedures, standards, and uniformity; concentration of theoretical and practical applications.

94.319 Law Enforcement Identification and Records II (3 q.h.)

Theories and practices in personal identification principles; survey and evaluation of present and new identification techniques; historical and legal consideration of identification and record data. *Prereq.* 94.318.

94.320 Police Public Relations (3 q.h.)

The principles of sound public relations for the entire police operation; writing, public speaking, conferences, and all news media; consideration of police image and public opinion.

94.321 Police Community Relations (3 q.h.)

A survey of the role and function of police in intergroup relations; human relations and minority groups; responsibilities of police with civil rights, civil disorders, and public protection.

94.322 Research Methods in Criminal Justice (3 q.h.)

A research project related to some specific police or correctional interest or operation, in consultation with the faculty ad-

viser. Course meets at discretion of the instructor. Project paper required for grade.

94.323 The Patrol Function I (3 q.h.)

The planning process related to the administration of the patrol function. Consideration of theoretical and operational aspects of various patrol systems; random patrol, response force, split force, team policing, probability theory, and the relationship between patrol and crime levels.

94.324 The Patrol Function II (3 q.h.)

A continuation of 94.323, with emphasis on the goals and objectives of police patrol management models. Discussion and analysis of manpower, work load, response time, patrol communications, preventive strategies, and inputs and outputs of patrol systems evaluated in quantitative form. *Prereq.* 94.323.

94.325 Introduction to Criminalistics I (3 q.h.)

A survey of the elements of microscopy, spectroscopy, and chemistry as applied to trace evidence in criminal investigations; responsibilities of technician, investigator, and others.

94.326 Introduction to Criminalistics II (3 q.h.)

Toxicology and serology; procedures related to other physical evidence; laboratory demonstrations and practical exercises. *Prereq.* 94.325.

94.327 The American Correctional System (3 q.h.)

A critical survey of the correctional field covering probation, institutions, and parole as to historical development, program content, and current problems and needs.

94.328 Social Deviance I (3 q.h.)

A consideration of the social problems of social disorganization, mental disorders, drug addiction, alcoholism, suicide, and sexual behavior.

94.329 Social Deviance II (3 q.h.)

Continuing consideration of world's population crisis, race and ethnic relations, family disorganization, work and automation, poverty and disrepute, war and disarmament. *Prereq.* 94.328.

94.330 Treatment of Offenders I (3 q.h.)

The concept of treatment and corrections; history; classification; training, education and guidance; treatment methods; inmate society; health and social services.

94.331 Treatment of Offenders II (3 q.h.)

Therapy, psychiatric and psychological considerations, case studies, evaluation of comparable methods. *Prereq.* 94.330.

94.332 Correctional Administration I (3 q.h.)

Correctional processes and services, standards, personnel and principles of management; allocation of resources, training of staff. Study of regular and special programs, volunteers and outside contracts.

94.333 Correctional Administration II (3 q.h.)

A further study of the principles of management; sentence reduction, discharge planning and work release administration. Types of institutions; compacts; regional concepts, planning, organizing, controlling and directing corrections, budgeting. *Prereq.* 94.332.

94.335 Investigative Report Writing (3 q.h.)

Report content and writing, exercises in accurate terminology and concise reporting, interpretation and evaluation of information, practical report-writing projects.

94.336 Police Supervision (3 q.h.)

The police supervisor's role in discipline; interdepartmental relations; problem handling and personnel policies; problems in supervisory relationships; wages, grievances, morale, and safety.

94.337 Police Work with Juveniles (3 q.h.)

The role of the police in delinquency prevention with emphasis on theory, administration, control, treatment, confinement, community resources, and relationships with the public and the juvenile court.

94.338 Criminology I (3 q.h.)

An introduction to the study of crime from the perspective of classical and contemporary criminological theories. In particular, attention is given to biological, psychological, and sociological approaches to the explanation of crime.

94.339 Criminology II (3 q.h.)

A continuation of Criminology I, with emphasis on the causes of crime and the relationship between law and crime. Specific implications of prevention, rehabilitation, and treatment are considered in depth. *Prereq.* 94.338.

94.340 Delinquency Prevention (3 q.h.)

A survey of delinquent behavior, causation, and delinquency prevention programs; seminar projects for discussion of specific problems and general principles in establishing delinquency prevention services.

94.341 Probation and Parole Practices I (3 q.h.)

The probation officer; pre-sentence investigation; conditions of probation; effectiveness, administrative aspects, and prediction methods; relationship to community.

94.342 Probation and Parole Practices II (3 q.h.)

The parole officer; conditions of parole; supervision; effectiveness; administrative relationships; relationships to the community, court and law enforcement agencies; relationships of probationer and parolee to rehabilitative, social, and family services; consideration of recidivism and aftercare. *Prereq.* 94.341.

94.343 Law Enforcement Management and Planning I (3 q.h.)

Philosophy and theories of management in law enforcement; studies of organization from the administrator's viewpoint, including control, efficiency, effectiveness, and discipline.

94.344 Law Enforcement Management and Planning II (3 q.h.)

A survey of the administrator's role, including special activities and responsibilities; administrative planning, civilian personnel, including recruitment, selection, evaluation; training; budgets; management records; interpersonal communications; auxiliary services; evaluation of present and future management systems. *Prereq.* 94.343.

93.345 Juvenile Corrections I (3 q.h.)

A study of police, detention, petition, and hearings related to

juveniles; juvenile court procedures, philosophy, and terminology; adjudication.

94.346 Juvenile Corrections II (3 q.h.)

Social workers, probation officers, judges, psychologists, and psychiatrists with relation to juveniles; institutions; after-care; prevention. *Prereq.* 94.345.

94.350 Document Control (3 q.h.)

A detailed study of procedures for handling and control of classified and other sensitive information; a survey of control systems from manual to semi-automated systems using data processing equipment.

94.351 Industrial Fire Prevention (3 q.h.)

Principles and practices of fire safety, including organization and management responsibility, property conservation, safeguards for construction, fire control apparatus and functions, engineering and scientific data on fires and related perils.

94.352 Physical Security I (3 q.h.)

The basic foundations for security in industry, banking, transportation, utilities, and other non-governing operations; physical requirements and standards.

94.353 Physical Security II (3 q.h.)

Implementation of security; study of inanimate aspects, including alarm and surveillance devices; study of animate aspects of protection. *Prereq.* 94.352.

94.354 Retail Security (3 q.h.)

The operation of security departments including functions of mercantile establishments; dishonest employees; shoplifters; management and public relations; receiving, shipping, and warehousing; special laws and procedures.

94.355 Bank Security Measures (3 q.h.)

An in-depth study of the principles and practices of security measures for banks and other financial institutions and the preparation of rules establishing minimum standards under current federal and state legislation.

94.356 Seminar in Security (3 q.h.)

An analysis of current problems in security such as growth patterns, salary structures, training and education, existing weaknesses; field trips, individual study assignments, and required oral and written reports.

94.357 Seminar in Correctional Practices (3 q.h.)

An analysis of current problems in corrections designed to meet the needs and interests of specific groups of students, practitioners, supervisors, and administrators of correctional programs.

94.358 The National Law Enforcement Seminar (3 q.h.)

An annual, concentrated exploration of current viewpoints, varied solutions, innovative procedures, and critical analyses in the issues facing law enforcement, correctional practices, and security, drawing on exceptionally qualified local and national figures. A research paper under the direction of a faculty adviser is required for credit. (Not offered every year).

94.359 Seminar in Hospital Security (3 q.h.)

The function of protection in the health industry; medical security administration, including study of health care pro-

viders; trends in hospital law; security from injury, fire and loss in the medical world; security methodology for safeguarding specialty areas; the security role in mass casualty management and emergency preparedness; the concept of professionalism; community liaison; and patient attitudes toward security.

94.360 Current Security Problems (3 q.h.)

An analysis of special problem areas such as security education and training, community relations, white-collar crime, drug abuse, theft control, shoplifting, document control, subversion and sabotage, protection of classified information, control of proprietary information and business espionage, labor problems, civil disturbances, and natural and man-made disasters.

94.361 Law Enforcement Mathematics I (3 q.h.)

A review of elementary algebra; algebraic expressions and operations, equations, word problems, and solutions to mathematical problems in their practical applications in the criminal justice field. Probability, trigonometry, statistics, ratio, and proportion.

94.362 Law Enforcement Mathematics II (3 q.h.)

Further review; fundamental operations, measurement and computation, solutions of linear and quadratic equations. Equations of motion and energy, permutations, combinations. Application of these principles will be applied to most areas of law enforcement. *Prereq.* 94.361.

94.364 Seminar in Law Enforcement—(Youth Crime Control) (3 q.h.)

The criminality and deviance of those between the juvenile and adult age. Consideration is given to: concepts and characteristics of the youthful offender; the role of the family in youth crime; the generation gap; violence of youth hoodliganism; drug addiction of youth; ordinary crimes of youth; the youth subculture and culture conflict; the role of mass media and education in youth crime; the concepts of freedom and justice in the youth culture; treatment of youthful offenders; and the state of youth crime control in foreign countries.

94.365 Seminar in Law Enforcement—(Victimology)

(3 q.h.)

Criminal-victim relationship, with emphasis on victim-precipitated crimes and compensation to the victims. Consideration is given to: concept and significance of "victimology," time, space, sex, age, and occupational factors in criminal-victim relationships; victims of murder, rape, other violent crimes, and property crimes; victim-typology; the public as victim; restitution to victims of crime; compensation to victims of crime; and the functional responsibility of the victim.

94.366 Seminar in Law Enforcement—(International Crime Control) (3 q.h.)

Crimes touching upon more than one country, with emphasis on international criminal law principles, treason, and espionage. Concentration is given to: the concept of law in its comparative aspects; customs; treaties; international conventions; "comity"; culture conflicts; the "international personality"; the "attempt clause"; the Belgian approach; the Ox-

ford approach; asylum, extradition; international ordinary criminals; political criminals; piracy (on sea and in the air); war criminals; genocide; international courts; League of Nations; United Nations; international criminal statistics; Interpol, the Soviet-type spy-schools; the history of American Intelligence.

94.367 Seminar in Law Enforcement—(Grantsmanship) (3 q.h.)

This seminar is designed to familiarize the participants with the orderly sequence of organizational steps required in providing the institutional framework necessary for preparation and submission of applications to granting agencies. Major topics include: Omnibus Crime Control and Safe Streets Act of 1968; functions of the Law Enforcement Assistance Administration; grant application strategy, planning, and research.

94.368 Seminar in Law Enforcement—(Operational Intelligence) (3 q.h.)

Designed to give the opportunity to the student to theoretically understand the value and function of an intelligence unit, including planning, directing, organizing, financing, and other salient features of the administration of these units. Emphasis is placed on organized crime, subversive activities, and liaison programs as they apply to a modern police agency.

94.369 Independent Studies (3 q.h.)

Faculty-guided research in individually selected topics relating to the criminal justice system.

94.370 Seminar in Law Enforcement—(Collective Bargaining) (3 q.h.)

The history and background of collective bargaining in the public sector as it affects members of the law enforcement field; initial establishment of rights of labor, labor legislation—federal and state; preparation for negotiation, resolutions of impasses, final agreement, and operation of the contract.

94.371 Man, Law, and Society I (3 q.h.)

A general analysis of the way in which major changes occur in the established practices of legal and social organizations and communities. Particularly concerned with the part played by legal institutions in initiating, controlling, and directing or assisting in such changes.

94.372 Man, Law, and Society II (3 q.h.)

An introduction to the social science concepts and methods in their current and potential application to social and legal problems. Aims to acquaint the student with a variety of social research concepts and methods of special utility in investigating diverse types of social law-related problems. *Prereq.* 94.371.

93.374 Seminar in Law Enforcement—(Interviewing Practicum) (3 q.h.)

Advanced interrogation methods and procedures; techniques of persuasion; conditioning (negative and positive); the polygraph, its history and methodology; the established rules and procedures required for current diagnosis of truth and deception; the evaluation of the contemporary methods of international law enforcement agencies.

94.375 Seminar in Law Enforcement—(Organized Crime) (3 q.h.)

The nature and problems of organized crime; causes and effects; comparative and historic roots; the activities, organization, and economics; possible solutions; the scope and techniques in combating organized crime.

94.376 Seminar in Law Enforcement—(Minorities and the Urban Crisis) (3 q.h.)

An investigation of the ethnic and racial origins and characteristics of the American people; the interaction, conflicts, and possibilities of adjustment between the dominant society and minority groups, particularly in contemporary urban settings; the role and function of police in their interrelationship with minority groups.

94.377 Seminar in Law Enforcement—(Criminal Behavior) (3 q.h.)

An examination of crime and criminal behavior as a social phenomenon. Three principle divisions: sociology of law and its effect; criminal etiology and the scientific analysis of the causes of crime; evaluation of the various rationales of detention as a crime-control factor.

94.378 Seminar in Law Enforcement—(Prosecutive Development) (3 q.h.)

Lecture and discussion relating to the professional requirements of the modern police officer in the United States; oral testimony; the entire corpus delicti and all other related matters in proper form and sequence; the trial; testimony and the jury; conduct on the witness stand; opposition counsel; the defense of entrapment; opinion testimony; confessions; prospective witnesses; legal standards and the police.

94.379 Seminar in Law Enforcement—(Forensic Laboratory) (3 q.h.)

Crime laboratory organization and utilization of special equipment for the analysis, interpretation, classification, and identification of physical evidence obtained in crime scene searches. The transportation, storage, and security of physical evidence and the effect of the results, coupled with the preparation of exhibits for courtroom presentation. *Prereq.* 94.326. (Laboratory fee)

94.380 Seminar in Law Enforcement—(Intervention Strategies and Tactics for Law Enforcement Counseling Techniques) (3 q.h.)

Basic concepts and principles of intervention as a social work method. Nature of therapeutic relationships, principles of communication. Diagnostic assessment of the person-problem-situation configuration. Goal-setting process. Ego-supportive procedures and use of community resources.

94.381 Civil Liberties and the Police I (3 q.h.)

An in-depth preparation for the officer facing the practical problems of enforcing the law without breaching the civil rights of the accused and bystanders; individual readings, lectures, group discussions, and preparations from Massachusetts and national interest cases; many incidents pertinent to the actions of the people involved with these problems will be investigated and studied; constitutional interpretation and limitations are the guidelines for the course.

94.382 Civil Liberties and the Police II (3 q.h.)

Several Supreme Court cases are followed from the time of the call, to the confrontation, arrest, examination in court, appeals, and the direct statements on the problem by jurists of the highest courts. The last section of the term ties in the latest criminal law and civil rights act changes including, but not limited to, criminal justice and no-knock laws and the latest Civil Rights Act. *Prereq.* 94.381.

94.383 Seminar in Law Enforcement—(Drugs) (3 q.h.)

Designed to acquaint the student with the needs of law enforcement personnel in the problematic area of drug abuse; the law, society classification, distribution, identification, and the effects of drugs.

94.384 Seminar in Law Enforcement—(Executive Development) (3 q.h.)

The role of the police administrator within the managerial structure. Special problems unique to the law enforcement executive, decision making, policy formation, planning, controlling, communicating, and directing. A consideration of case studies and surveys will be utilized.

94.385 Seminar in Law Enforcement—(Mental Health & the Police) (3 q.h.)

A study of the roles of law enforcement and mental health services. Diagnosis of the triggering mechanisms of behavioral disorders and the suicidal phenomenon; psychiatric and psychological considerations; case studies and the legal process.

94.386 Seminar in Law Enforcement—(Data Processing) (3 q.h.)

An introduction to automated systems utilized in the field of law enforcement; basic program concepts; filing and sorting techniques; available input and output storage media; types and sources of data communications and applications.

94.387 Administration of Justice I (3 q.h.)

A survey of the evaluation of justice from the earliest times, developed historically, with particular emphasis on Western justice and American justice, including the roles played by the judiciary, with stress on due process and the constitutional guarantees.

94.388 Administration of Justice II (3 q.h.)

An analysis of the various groups and professions in the American justice system. Emphasis is fixed on human relations, efficiency, current trends, and the future role of the American criminal justice system. *Prereq.* 94.387.

94.389 Civil Law in Criminal Justice I (3 q.h.)

Civil matters such as defamation, negligence, assault and battery, false confinement, trespass, conversion, and agency relationships.

94.390 Civil Law in Criminal Justice II (3 q.h.)

Civil matters such as the law of contracts, bailments, domestic relations and business relationships which should be known to and distinguished by law enforcement personnel. *Prereq.* 94.389.

94.391 Criminal Law I (3 q.h.)

Exploration of the major problems of criminal law as a device

for controlling socially undesirable behavior. It is intended to give one a working knowledge of the basic questions of public policy involved in the administration of criminal justice and the legal principles of determining criminal liability. Course includes a consideration of specific crimes, elements of a crime, parties to a crime, and defenses to a crime.

94.392 Criminal Law II (3 q.h.)

Consideration of vital constitutional and statutory concepts, including self-incrimination, search and seizure, law of arrest, criminal procedure and responsibility, confessions, right to counsel, and conduct of trial in the District, Superior, Appellate, and Federal Courts. *Prereq.* 94.391.

94.393 Evidence and Court Procedure I (3 q.h.)

Rules of evidence; principles of exclusion; evaluation and examination of evidence and proof.

94.394 Evidence and Court Procedure II (3 q.h.)

Competency, consideration of witnesses, laws of search and seizure, court procedures, moot court exercises. *Prereq.* 94.393.

94.395 Fire Investigation and Arson I (3 q.h.)

A study of the elementary chemistry of combustion involving sources of ignition, fuels, the nature and behavior of gases and their toxicity. The combustion properties of non-solid fuels as opposed to the combustion properties of solid fuels are considered. Consideration is also given to explosions associated with fires. Discussion of the socio-economic aspects of fire including the pyromaniac and his or her physiological involvement.

94.396 Fire Investigation and Arson II (3 q.h.)

A concentrated approach is taken in dealing with the fire bug and his or her sociological orientation. A discussion of carbon, hydrogen, and oxygen as major elements in all fires and the flameless ignition effect. Methods of fireproofing are also considered and references made to various types of building materials as well as the role of pyrolysis. Fire patterns of structural fires and asphyxiation along with the legal aspects of arson are also considered. *Prereq.* 94.395.

94.397 Law Enforcement Fiscal Management (3 q.h.)

The various budgeting systems and their application to law enforcement organizations including: the line-item budget, programmed budget, performance budget, and the planned programmed budget system; development of sound fiscal policy; appropriation of funds; tax base revenue systems; distribution of public monies; budget request, expenditures; and auditing procedures.

94.398 Massachusetts Criminal Law (3 q.h.)

A comprehensive study of Massachusetts Criminal Law and its application by law enforcement officers. Areas of study include: Common law, criminal statutes, Annotated Laws, Criminal Case Law, Supreme Court Decisions, and Motor Vehicle Law.

94.399 Alcohol Problems in Law Enforcement (3 q.h.)

Acquaints the student with the current state of knowledge on society, culture, and drinking patterns; the variety of alcohol problems that confront peace officers; discussion of the range of solutions available.

94.400 Honors Program I (4 q.h.)*Prereq. Approval of the Dean.***94.401 Honors Program II (4 q.h.)***Prereq. 94.400.***94.402 Honors Program III (4 q.h.)***Prereq. 94.401.***94.403 Security Administration I (3 q.h.)**

The historical, philosophical, and legal basis of security operations. A study of various security methods, utilizing personnel, equipment, and procedures.

94.404 Security Administration II (3 q.h.)

The organization, administration, and management of the security function; the systems approach to security operations, utilizing personnel and equipment resources. *Prereq. 94.403.*

94.406 Legal Aspects of Security Operations (3 q.h.)

The study of areas of law relevant to the security professional, including related aspects of Criminal, Civil, Regulatory and Labor Law.

94.407 Introduction to Government Security Programs (3 q.h.)

An introduction to various government security programs, including the Department of Defense, Industrial Security Program (DCASR), and the Nuclear Regulatory Commission Security Standards, and an analysis of the policy and legal basis for such programs.

Law Enforcement Intensive Courses**97.401 Criminal Law (Intensive) (6 q.h.)**

Combination of 94.391 and 94.392.

97.402 Evidence and Court Procedure (Intensive) (6 q.h.)

Combination of 94.393 and 94.394.

97.403 Civil Law in Criminal Justice (Intensive) (6 q.h.)

Combination of 94.389 and 94.390.

97.404 Civil Liberties and the Police (Intensive) (6 q.h.)

Combination of 94.381 and 94.382.

97.405 Interviews and Interrogations (Intensive) (6 q.h.)

Combination of 94.308 and 94.309.

97.406 Traffic Safety and Control (Intensive) (6 q.h.)

Combination of 94.314 and 94.315.

97.407 Law Enforcement Identification and Records (Intensive) (6 q.h.)

Combination of 94.318 and 94.319.

97.408 Introduction to Criminalistics (Intensive) (6 q.h.)

Combination of 94.325 and 94.326.

97.409 Social Deviance (Intensive) (6 q.h.)

Combination of 94.328 and 94.329.

97.410 Law Enforcement Management and Planning (Intensive) (6 q.h.)

Combination of 94.343 and 94.344.

97.411 The Patrol Function (Intensive) (6 q.h.)

Combination of 94.323 and 94.324.

97.412 Criminal Investigation and Case Preparation (Intensive) (6 q.h.)

Combination of 94.304 and 94.305.

97.413 Criminology (Intensive) (6 q.h.)

Combination of 94.338 and 94.339.

97.414 Treatment of Offenders (Intensive) (6 q.h.)

Combination of 94.330 and 94.331.

97.415 Probation and Parole Practices (Intensive) (6 q.h.)

Combination of 94.341 and 94.342.

97.416 Fire Investigation and Arson (Intensive) (6 q.h.)

Combination of 94.395 and 94.396.

97.417 Advanced Correctional Practices (Intensive) (6 q.h.)

Combination of 94.311 and 94.312.

97.418 Correctional Administration (Intensive) (6 q.h.)

Combination of 94.332 and 94.333.

97.419 Law Enforcement Mathematics (Intensive) (6 q.h.)

Combination of 94.361 and 94.362.

97.421 Man, Law, and Society (Intensive) (6 q.h.)

Combination of 94.371 and 94.372.

97.422 Administration of Justice (Intensive) (6 q.h.)

Combination of 94.387 and 94.388.

Faculty

- Ruth M. Aaron, M.S.
Health Professions
St. Elizabeth's Hospital
- Francis Abbate, M.A.
Law Enforcement
Westwood Police Department
- Donald C. Abbott, B.A. *
Chemistry
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- Herbert Abrams, M.L.
Law Enforcement
Berman, Lewenberg & Abrams
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- Joseph S. Ackerstein, J.D.
Health Professions
U.S. Dept. H.E.W.
- Thomas S. Adamczyk, M.S.W.
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- Henry Adleman, B.S. *
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Law
Silver and Ahern
- H. David Ahlberg, Ph.D. *
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History
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Earth Science
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Political Science
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- Donald R. Allen, Ph.D.
History
Northeastern University
- Michael B. Allen, A.M.
Philosophy/Religion
Boston University
- Israel Alut, Ph.D.
Modern Languages
Northeastern University
- Bruce C. Anderson, M.S.
Chemical Engineering
- Dora L. Anderson, M.Ed.
Personnel and Industrial Relations
Self-Employed
- Harley H. Anderson, Esq., J.D. *
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Harley Anderson Law Offices
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Mansfield High School
- Paul G. Anderson, B.S.
Art
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- R. Wayne Anderson, Ph.D.
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Commercial Union Assurance Co. Ltd.
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- Warren F. Averill, M.S. *
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- Hilda Bachrach, A.B.
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Howard Johnson Company
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Carl Blackman & Co.
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Management Sciences
Courier Corp.
- Hugh J. Crossland, D.B.A.
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Meyers Goldstein & Crossland
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Boston Globe Newspaper Co.
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Sun Management and
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- Charles Daum, Esq., J.D. *
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Law Enforcement
Retired
- Richard D. Delmore, Jr., M.S.
Biology
Northeastern University
- Dante J. Demichaelis, J.D.
Law Enforcement
District Attorney's Office
- Robert J. Dennehy, M.B.A.
Accounting
C.P.A.
- Mabel T. Denunzio, M.Ed.
Law Enforcement
Revere School Department
- Arthur J. Depietro, M.A.
Law Enforcement
Marion Manor Nursing Home
- Paul J. Derby, M.B.A. *
Information Systems
Honeywell Inc.
- Joseph B. DeRoche, M.F.A.
English
Northeastern University
- James J. Desposito, M.A.
Psychology
Northeastern University
- Michelle M. Deubel, B.S.
Therapeutic Recreation
Shriners Burns Hospital
- Brian S. Dextradeur, B.S.
Management Sciences
Polaroid Corp.
- Arthur F. Diette, B.S.
Law Enforcement
Lowell Police Dept.
- Edward J. Dillon, M.B.A.
Personnel and Industrial Relations
Raytheon Co.
- Howard T. Dimmick, M.Ed.
Earth Science
Town of Stoneham
- Anthony DiNardo, LL.B.
Personnel and Industrial Relations
The Stop and Shop Companies
- Robert F. Dincauze, M.B.A.
Management
Tranco Inc.
- Ernest S. Dinisco, J.D.
Law Enforcement
Middlesex County District
- Francis J. DiSabatino, M.A.
Chemistry
Quincy High School
- Melinda M. DiSessa, M.A.
Philosophy/Religion
- Philip S. DiSalvo, M.Ed.
Health Professions
Wedgwood Nursing Home
- Arnold R. DiSilvestro, M.B.A.
Finance
Consultant
- Theodore Distaso, Jr., M.B.A.
Political Science
Northeastern University
- Rosemarie M. Dittmer, M.A.
English
Graham Junior College
- Alan F. Dodd, Esq., J.D.
Political Science
Dodd & Hale
- Edward Doherty, B.S.
Law Enforcement
Boston Police Department
- Paul C. Doherty, Jr., B.S.
Biology
Northeastern University
- Robert A. Dolan, Ed.D.
Law Enforcement
Research Publishing Co. Inc.
- Michael B. Donham, M.B.A.
Personnel and Industrial Relations
D.A.R.E. Inc.
- John A. Donovan, M.A.
Economics
Northeastern University
- Timothy R. Donovan, Ph.D.
English
Northeastern University

- Eugene J. Doody, M.B.A. *
Personnel and Industrial Relations
Chesterton Co.
- Marcia A. Dorey, M.S.
Library Science
Northeastern University
- John S. Dowd, M.S.W.
Anthropology/Sociology
Mass. Dept. of Mental Health
- Nancy L. Dowling, B.S.
Reading
Northeastern University
- Rose A. Doyon, M.A.
English
C. Paul Dredge, M.A.
Anthropology/Sociology
Northeastern University
- John P. Driscoll, Esq., J.D.
Real Estate
Consultant
- Richard E. Driscoll, J.D.
Law Enforcement
Central District Court
- Robert V. Driscoll, B.S.
Law Enforcement
M.I.T. Lincoln Laboratory
- Walter T. Driscoll, Jr., M.C.J.
Law Enforcement
Scituate Police Department
- Lawrence L. Drolet, M.S.
Biology
Northeastern University
- David C. Dronsick, M.A.
Earth Science
Commonwealth of Massachusetts
- Edward L. Dube, M.B.A. *
Management
Mass. Mutual Life Ins. Co.
- Ardyn E. Dubnow, M.B.A. *
Accounting
Northrop Corp.
- Terrance J. Dugan, M.B.A.
Finance
Shawmut Banks of Boston
- Edward A. Duprez, Jr., M.B.A.
Management
Framingham School Dept.
- James W. Earley, M.B.A. *
Personnel and Industrial Relations
Raytheon Co.
- Norman J. Ebsary, M.P.A.
Law Enforcement
Boston Police Dept.
- Edward A. Eckhard, M.B.A.
Accounting
North Shore Comm. College
- William T. Edgett, M.A. *
History
Northeastern University
- Ralph W. Edwards, M.S.
Health Professions
Bay State P.S.R.O.
- Andrew E. Elstathiou, B.A.
Information Systems
Comm. of Massachusetts
- Gary F. Egan, M.Ed.
Law Enforcement
Mass. C.J. Training Council
- Robert L. Ehrmann, M.D.
Cyrotechnology
Boston Hospital for Women
- James H. Elgin, M.B.A.
Information Systems
Digital Equip. Corp.
- Louis J. Ennis, M.B.A.
Management
Brandeis University
- J. Clive Enos, B.S. *
Personnel and Industrial Relations
Raytheon Co.
- Herbert J. Eskowitz, M.A.
Economics
U.S. Dept. of Transportation
- Robert W. Esmond, B.S.
Chemistry
Northeastern University
- James T. Ethier, B.S.
Biology
Northeastern University
- Benedetto Fabrizi, Ph.D.
Modern Languages
Northeastern University
- Robert M. Fahey, M.Ed.
Information Systems
Mass. General Hospital
- Sheryl L. Fairchild, B.S.
Therapeutic Recreation
Malden Hospital
- Eugene F. Fallon, M.B.A.
Finance
Genrad Inc.
- Edward J. Falvey, M.B.A.
Management
New England Merchants National Bank
- Andrew C. Fantasia, M.B.A.
Accounting
Charles E. Depisa & Co.
- Lancelot L. Farrar, Jr., Ph.D.
History
Daniel M. Fasulo, M.P.A.
Law Enforcement
Haverhill Police Dept.
- Richard J. Faulstich, A.B.
Personnel and Ind. Relations
Raytheon Company
- John E. Fedele, Esq., J.D.
Insurance
New England Life Ins.
- Irwin Feigelman, B.S. *
Accounting
U.S. Government
- Martha S. Feinberg, B.A.
Health Professions
Union Hospital
- William A. Ferson, M.A.
Economics
U.S. Dept. of Labor
- Barbara Ann P. Filo, M.A.
History
Charles A. Findley, Ph.D.
Drama/Speech
Northeastern University
- Francis X. Finigan, M.Ed. *
Earth Science
Winchester Public Schools
- Daniel J. Finn, Esq., J.D.
Political Science
Daniel J. Finn, Esq.
- Albert J. Finney, Jr., B.S. *
Accounting
Raytheon Company
- Karen L. Fischer, M.Ed.
Art
William H. Fisher, M.Ed.
Anthropology/Sociology
Northeastern University
- Leo J. Fitzgerald, M.B.A.
Industrial Mgt.
General Electric
- Paul A. Fitzgerald, J.D.
Accounting
U. S. Treasury Dept.
- Kevin T. Fitzpatrick, M.B.A. *
Finance
Boston Public Library
- J. Joseph Fitzsimmons, Jr., M.B.A.
Management
Polaroid Corp.
- Richard E. Flaherty, B.S.
Law Enforcement
Metropolitan District Police
- Lyn B. Fleming, M.Ed.
Health Professions
Mass. General Hospital
- David E. Floreen, M.P.A.
Political Science
Leo M. Flynn, M.B.A.
Real Estate
Leo Flynn Real Estate & Appraising
- Peter E. Flynn, J.D.
Real Estate
Leo M. Flynn Real Estate and Appraising
- William B. Flynn, Ph.D.
Psychology
Merrimack Valley College
- Martin E. Foley, M.P.A.
Law Enforcement
Mass. State Police
- Robert J. Forrest, Esq., J.D.
Accounting
Briggs, Forrest, Leonard & Gau
- Douglas G. Foster, M.Ed. *
Earth Science
Jeremiah E. Burke High School
- Gale P. Foster, B.S. *
Marketing
Samson Ocean Systems, Inc.
- Robert M. Fox, M.B.A.
Marketing
Gerber Electronics
- Walter Fox Tree, M.F.A.
Art
Boston State College
- Susan H. Francis, M.A.
English
Howard H. Freedman, M.S. *
Accounting
Raytheon Co.
- Morris Freilich, Ph.D.
Anthropology/Sociology
Northeastern University
- Pamela C. Freundl, M.A.
Psychology
Beaverbrook Guidance Center
- Melvin W. Friedman, M.B.A. *
Management
M.W. Friedman Assoc.
- Thomas L. Gaffney, A.S.
Marketing
Ingalls Associates Inc.
- W. Arthur Gagne, Jr., M.B.A. *
Management
Worcester Art Museum
- Esther M. Gallagher, D.D.S.
Health Professions
Tufts University
- William W. Gallagher III, B.A.
Finance
Coroon & Black
- Robert J. Galvin, J.D.
Real Estate
Lippman Miller Galvin Walker
- Mary E. Garmernan, B.A.
Biology
Northeastern University
- Rawle W. Garner, M.A.
Marketing/Law Enforcement
Federal Trade Commission
- Robert L. Garnick, B.S.
Chemistry
Northeastern University
- John A. Gavin, M.A.
Law Enforcement
Retired (Mass. Comm. of Corrections)
- Stanley S. Gawlinski, B.S.
Law Enforcement
District Attorney's Office
- Michael H. Gay, Pharm.D.
Health Professions
Northeastern University
- Paul C. Gay, J.D. *
Law
Attorney
- Gerard J. Geant, B.A.
Real Estate
U. S. Postal Service
- Sandra E. Geer, M.A.
Psychology
Boston State College
- Victor A. Gelineau, Ph.D.
Anthropology/Sociology
Commonwealth of Mass.

- Samuel S. Geller, M.B.A.
Accounting
Camp, Dresser & McKee
- John R. Geraghty, M.B.A.
Management
I.B.M. Corp.
- Michael Gero, M.B.A.
Information Systems
Northeast Red Cross Blood Pg.
- Burton W. Gerrig, J.D.
Law Enforcement
Community Health Educational Center
- John M. Gettings, A.S.
Information Systems
R.S. Means
- Emanuel M. Gilbert, B.S.
Marketing
E.M. Gilbert Assoc.
- Edwin S. Giles, Jr., B.S. *
Information Systems
Massachusetts Teachers Assoc.
- Clyde S. Gill, B.S.
Law Enforcement
Sandwich Police Department
- Gregory Gillis, M.A.
Biology
- Philip L. Gilman, B.S.
Law Enforcement
Minuteman Regional Vocational High School
- Mary A. Gilmore, B.A.
Political Science
Northeastern University
- Alan B. Gladstone, B.S.
Accounting
Alan Gladstone, C.P.A.
- Harvey Glass, J.D.
Personnel and Industrial Relations
Stone & Webster Eng. Corp.
- Daniel D. Glatthorn, M.B.A.
Industrial Management
Boston Housing Authority
- Helen R. Glazer, B.S.
Health Professions
U.S. Public Health Service Hospital
- L. James Glinos, M.Ed. *
Personnel and Industrial Relations
Glinos Associates
- Leonard B. Goldberg, B.A.
Biology
Northeastern University
- Linda S. Goldberg, C.A.G.S.
English
- Robert L. Goldberg, M.B.A. *
Management
John Hancock Dist. Inc.
- Frederick T. Golder, Esq., J.D.
Personnel and Industrial Relations
Frederick T. Golder Law Offices
- Alan M. Goldfine, M.B.A.
Accounting
Fmr. Invest. Service Inc.
- Harriet K. Goldin, M.S.
Reading
Northeastern University
- Ira W. Goldklang, B.A.
Biology
Northeastern University
- Jack B. Goldman, B.A.
Health Professions
Ames Color File Corp.
- Minton F. Goldman, Ph.D.
Political Science
Northeastern University
- Stan Goldman, M.A.
Political Science
Governor's Staff, Mass.
- Harold M. Goldstein, Ph.D.
Economics
Northeastern University
- Howard I. Goldstein, J.D.
Law
Attorney
- M. Alvin Goldstein, A.B. *
Information Systems
General Electric
- Robert J. Goldstein, M.A.
Anthropology/Sociology
Northeastern University
- Joseph M. Golemme, M.A. *
Accounting
Northeastern University
- Roberta L. Golick, J.D.
Personnel and Industrial Relations
Mass. Board of Conc. & Arb.
- Judith R. Goodman, M.A. *
English
- Leon M. Goodman, M.B.A. *
Personnel and Industrial Relations
New England Telephone Co.
- Stephen Goodyear, M.A.
Modern Languages
Hull Public Schools
- Bernard L. Gordon, M.S. *
Earth Science
Northeastern University
- Daniel D. Gordon, M.A.
Economics
Salem State College
- Ralph D. Gordon, M.A.
Personnel and Industrial Relations
New England Merchants Bank
- Mary Jane Gorton, M.A. *
Art
Animal Aid Inc.
- Leslie C. Gosule, B.S.
Accounting
C.P.A.
- Daniel Z. Gould, M.B.A.
Industrial Management
L.F. Fales Machine Co.
- David F. Grace, M.A. *
English
Lasell Junior College
- Daniel A. Grady, M.B.A. *
Accounting
Wm. Underwood
- William E. Grady, B.S. *
Industrial Management
Courier Corporation
- Bonnie Graham, B.S.
Women's Programs
Raytheon Company
- Katherine A. Grandy, B.S.
Biology
Northeastern University
- Patrick Grant, Jr., M.P.A.
Health Professions
McLean Hospital
- Leon S. Graubard, M.A.
Economics
Worcester Technical
- E. Michael Green, M.B.A.
Accounting
Digital Equipment Corp.
- Nancy S. Green, M.S.
Anthropology/Sociology
Northeastern University
- Richard T. Green, Ed.D.
Therapeutic Recreation
Masconomet Regional High School
- Herbert J. Greenwald, Ph.D.
Psychology
Bridgewater State College
- John T. Gregg, B.S.
Real Estate
Spaulding & Snye Mgmt. Co.
- Kristo A. Gregory, M.B.A.
Finance
L.F. Rothschild, Unterberg, Towbin
- Dennis A. Gribenas, M.B.A.
Finance
Avco Corporation
- Gerald R. Griffin, Ph.D.
English
Northeastern University
- John L. Griffith, B.S. *
Management
State Dept. of Environmental Management
- Joseph Grimaldi, M.A.
History
First National Bank of Boston
- Duane L. Grimes, Ph.D. *
Political Science
Northeastern University
- Susan R. Grolnic, B.S.
Reading
Northeastern University
- Sharon Grover, B.S.
Health Professions
Randolph Public Schools
- Sidra Gruss-Zamosky, M.S.
Therapeutic Recreation
Wightman Health Center
- John J. Guarino, B.A.
Biology
Northeastern University
- George J. Guilbault, M.A.
Music
Johnson & Higgins of Mass., Inc.
- Robert J. Guimond, B.S.
Accounting
Robert J. Guimond, C.P.A.
- Ronald E. Guittarr, B.S.
Personnel and Industrial Relations
Raytheon Company
- Lawrence M. Gulko, M.B.A.
Marketing
Data General
- John R. Gustafson, M.B.A.
Accounting
John Hancock Life Ins. Co.
- Reginald W. Hache, M.A.
Music
Northeastern University
- Edward A. Hacker, Ph.D. *
Philosophy/Religion
Northeastern University
- Richard S. Haddad, M.B.A.
Accounting
Union Carbide Imaging Sys.
- William T. Hadley, B.S.
Marketing
Batten Barton Durstine, Osborn
- George W. Hahn, M.A.
Earth Science
Newton Public Schools
- Martin H. Halabian, M.A.
History
Nat. Association for Armenian Studies and Research
- John Halberstadt, M.S.
English
Northeastern University
- James F. Hall, Jr., M.S.
Chemistry
Northeastern University
- Herbert E. Halliday, B.S.
Law Enforcement
Cambridge Police Department
- Paul M. Halloran, B.S.
Information Systems
Raytheon Co.
- Donald J. Halpin, M.B.A. *
Finance
Winchester Fin. Mgt. Corp.
- Isadore Halzel, M.B.A. *
Management
Charles Stark Draper Labs.
- Jacalyn S. Hamada, B.A.
Therapeutic Recreation
Crittendon-Hastings House
- Clarence D. Hammond, Ph.D.
Psychology
Northeastern University
- William F. Hancock, Jr., M.B.A. *
Finance
Softech
- Francis R. Hankard, M.A.
Law Enforcement
Dept. of Public Safety

- Robert A. Hankin, Ph.D.
Economics
Northeastern University
- Sharon M. Hannon, B.S.
Psychology
- Norman E. Hansen, M.B.A.
Marketing
Consultant
- Paul H. Hansen, B.A.
Political Science
Northeastern University
- Ronald M. Hansen, M.A.
Psychology
Northeastern University
- James J. Hardcastle III, A.B.
Transportation
The Gillette Co.
- Gerald I. Harel, Ph.D.
Economics
Mass. College of Pharmacy
- Stanley A. Harmen, Ph.D.
English
Temp. Ed.
- David J. Harrigan, M.B.A. *
Management Sciences
D.J. Harrigan Associates
- Gary C. Harris, Ph.D.
Biology
Wellesley College
- Ruth Ann J. Harris, M.A.
History
- Pamela H. Hart, M.A. *
Modern Languages
- Thomas M. Hart, M.S.
Accounting
U. S. Treasury
- George E. Hawkins, M.B.A.
Management Sciences
Polaroid Corporation
- Donald R. Hayden, B.S.
Information Systems
United Carr
- David W. Hayes, Esq., LL.B.
Political Science
The Seiler Corporation
- Marie J. Hayes, M.A.
Psychology
Northeastern University
- Robert T. Heald, M.B.A.
Accounting
Price Waterhouse & Co.
- George E. Healy, LL.B.
Law Enforcement
Attorney Healy
- Warren K. Heckman, M.A. *
Management
W.K. Heckman Associates
- Robert J. Hehre, D.B.A. *
Finance
Northeastern University
- Barbara J. Hein, M.S.W.
Therapeutic Recreation
Mount Auburn Hospital
- Carolyn R. Henderson, M.A.
Reading
Northeastern University
- Robin M. Hendrich, M.A.
Music
Northeastern University
- William J. Hendry III, B.A.
Biology
- Dianne E. Hennessy, M.Ed.
Personnel and Industrial Relations
Consultant
- George S. Hennessy, M.B.A. *
Marketing
Documation Corp.
- Gerald H. Herman, M.A.
History
Northeastern University
- George M. Herrick, M.B.A.
Finance
John E. Cain Co.
- Max E. Hess, M.A.
Anthropology/Sociology
Northeastern University
- George F. Hickey, Jr., M.S.
Library Science
Town of Billerica
- Robert L. Hicks, M.B.A.
Finance
Consultant
- Chester W. Higgins, M.B.A. *
Management
M. B. T. A.
- Peter Higgins, M.B.A. *
Accounting
Consultant
- William F. Higgins, B.S.
Law Enforcement
Medford Police Department
- Arthur P. Hill, M.B.A.
Marketing
Hill Assoc. Inc.
- Betty J. Hillman, M.A.
Music
Elma Lewis School
- Stephen A. Hiltz, M.A.
History
Northeastern University
- James R. Hindman, M.B.A.
Personnel and Industrial Relations
Northrop Corp.
- JoAnna Hiss, M.S.W.
Women's Programs
Digital Equipment Corp.
- David W. Hmielowski, M.A.
Therapeutic Recreation
Mary Lane Hospital
- Christine L. Hobart, D.B.A.
Personnel and Industrial Relations
Northeastern University
- Richard J. Hoffmann, B.S.
Therapeutic Recreation
Creative Educational Association
- James E. Hogan, M.B.A.
Finance
New England Merchants Bank
- Gail F. Holbrook, M.A.
Drama/Speech
Northeastern University
- Wheaton A. Holden, Ph.D.
Art
Northeastern University
- William J. Holden, M.A.
Marketing
Bay State Abrasives
- Wayne B. Hollingsworth, J.D.
Law Enforcement
U.S. Dept. of Justice
- Susan W. C. Holton, M.A. *
Anthropology/Sociology
Tufts University
- Juli S. Hong, B.S.
Chemistry
Northeastern University
- James A. Hope, M.B.A. *
Information Systems
Stone Marketing Corp.
- Stephen L. Hopkins, B.S.
Biology
Northeastern University
- Daniel J. Horgan, Jr., J.D. *
Law
Attorney
- Leo Horowitz, B.S.
Finance
Consultant
- Jude T. Hourihan, D.Sc.
Health Professions
Harvard School of Public Health
- Francis A. Howard, J.D.
Law Enforcement
Retired
- Martin J. Howard, M.B.A.
Accounting
Peat, Marwick, Mitchell & Co.
- Jane A. Howe, B.S.
Anthropology/Sociology
- Jeffrey C. Howry, Ph.D.
Anthropology/Sociology
Environmental Research and Technology
- Thomas J. Hubbard, M.B.A.
Marketing
Boston Business Computers Inc.
- Richard R. Hudner, B.A.
Management
- Anthony H. Hull, Ph.D.
History
- Doris A. Hunter, Ph.D.
Philosophy/Religion
- Robert A. Hunter, M.A.
English
Mansfield High School
- Daniel F. Hurley, J.D. *
Industrial Relations
Consultant
- Thomas G. Hurley, M.A.
English
- Joseph J. Hurwitz, Ph.D.
English
Northeastern University
- William F. Hutchins, M.Ed.
Information Systems
Wang Laboratories, Inc.
- Patrice Iacovelli, M.B.A.
Accounting
Raytheon Co.
- Eric A. Iljes, B.S.
Biology
Northeastern University
- Jack F. Ingalls, B.S.
Law Enforcement
Casualty Life & Surety Cos.
- John J. Irwin, Jr., J.D.
Law Enforcement
Assoc. Justice/Mass. Superior Court
- Arthur L. Isberg, J.D.
Law Enforcement
Dept. of Correction
- Mervyn Israel, Ph.D. *
Chemistry
Sidney Farber Cancer Institute
- Herbert H. Itzkowitz, M.B.A.
Accounting
Rosenthal Forman Itzkowitz
- Jane Ives, M.A.
Political Science
Harbridge House
- Bynum M. Jackson, Ph.D.
Health Professions
Northeastern University
- Carol A. Jackson, M.A.
Political Science
Northeastern University
- Phillip S. Jackson, Esq., LL.B. *
Law
Attorney
- Alvin L. Jacobson, Ph.D.
Anthropology/Sociology
Abt Associates, Inc.
- Joshua R. Jacobson, M.A.
Music
Northeastern University
- John W. Jagel, M.F.A.
Art
- Thomas E. Jalliet, M.A.
Law Enforcement
Sandwich High School
- John J. Jamison, B.S.M.E. *
Information Systems
Honeywell
- Paul A. Janell, Ph.D.
Accounting
Northeastern University
- Chester A. Janiak, M.S.
Political Science
Northeastern University
- Marian C. Jennings, M.B.A.
Women's Programs
Mass. General Hosp.

*Denotes senior lecturer as of October, 1978.

- Carlson C. Johnson, Jr., Ph.D. *
Psychology
Emmanuel College
- Davis M. Johnson, B.A.
Therapeutic Recreation
McLean Hospital
- Donald R. Johnson, M.B.A.
Personnel and Industrial Relations
N.E. Telephone Co.
- Janet Johnson, M.B.A.
Finance
New England Merchants Bank
- John W. Johnson, M.B.A.
Personnel and Industrial Relations
I.B.M. Corp.
- Karen S. Johnson, M.A.
Anthropology/Sociology
Harvard University
- Robert F. Johnson, J.D.
Law Enforcement/Security
First Security Service Corp.
- Robert P. Jolie, M.A.
Law Enforcement
Shrewsbury Jr. High School
- Joseph M. Jordan, M.P.A.
Law Enforcement
Boston Police Dept.-Commissioner
- Frank J. Joyce, B.S.
Law Enforcement
Mass. State Police
- Joseph A. Kaczenas, B.S.
Information Systems
New England Mutual Life Insurance
- Martin J. Kahan, B.S.
Information Systems
Mast Industries, Inc.
- Eugenia O. Kaledin, Ph.D. *
English
Northeastern University
- Martin A. Kalustian, M.B.A.
Management
Raytheon Company
- Edward L. Kandib, M.Ed. *
Accounting
Public Accountant
- Donald E. Kane, B.S.
Law Enforcement
Barnstable Police Dept.
- Martin J. Kane, M.B.A. *
Purchasing
Raytheon
- F. Patricia Kannon, B.S.
Marketing
Consultant
- Charles J. Kantor, M.B.A.
Marketing
The Gillette Company
- Deborah D. Kaplan, B.S.
Health Professions
Forsyth Institute for Research
- Edward M. Kaplan, M.S.
Accounting
Mass. General Hospital
- Mort S. Kaplan, M.A. *
Drama/Speech
Northeastern University
- Gary M. Karelis, M.B.A.
Accounting
M. Karelis Wood Heel Co.
- Charles Karis, Ph.D.
Psychology
Northeastern University
- Harvey E. Karl, M.B.A.
Accounting
C.P.A.
- Ronald D. Karr, M.A.
History
Raytheon Service Co.
- Harold D. Kastle, M.A. *
Personnel and Industrial Relations
Raytheon Co.
- Stanley W. Kaszanek, Jr., M.A.
Anthropology/Sociology
Suffolk University
- Deborah S. Katz, M.B.A.
Finance
Stop & Shop Company
- Stephen R. Katz, Esq., J.D.
Political Science
Stephen R. Katz, Esq., Attorney at Law
- Ronald P. Kaufman, B.S.
Law Enforcement
Mass. Dept. of Public Safety
- Robert C. Kazarian, M.A.
Economics
Northeastern University
- Helen Keaney, M.A. *
Music
Northeastern University
- Walter E. Kearney, M.B.A.
Accounting
Northeastern University
- John S. Kearns, M.A.
Psychology
Northeastern University
- George L. Keele, A.B.
Law Enforcement
Parole Board
- Stephen A. Keele, M.Ed.
Personnel and Industrial Relations
Beaverbrook STEP
- Hee Sung Keel, M.A.
Philosophy/Religion
John A. Keith, Jr., J.D.
- John A. Keith, Jr., J.D.
Management
John Hancock Mutual Life
- Joseph A. Kelley, B.S.
Law Enforcement
U.S. Gov't Central Service Administration
- William E. Kelley, M.B.A. *
Accounting
Massachusetts Institute of Technology
- Thomas W. Kelly, M.B.A. *
Information Systems
Mass. General Hospital
- Solomon Kenea, M.A.
Economics
Northeastern University
- Raymond C. Kennedy, B.A.
Anthropology/Sociology
Thomas J. Kennedy, M.B.A.
- Thomas J. Kennedy, M.B.A.
Finance
M.B.T.A.
- Edward J. Keohan, LL.B.
Accounting
American Science & Eng., Inc.
- Paul G. Keough, M.P.A.
Political Science
U. S. Environmental Protection Agency
- James J. Kerasiotes, B.A.
Political Science
Northeastern University
- Rostron J. Kershaw, M.S.
Therapeutic Recreation
Northeastern University
- A. David Kessler, Esq., J.D.
Accounting
Consultant
- John H. Kimball, Jr., J.D.
Real Estate
Kimball & Kimball
- Brian L. King, M.B.A.
Marketing
Control Data Corporation
- Philip J. King, M.A.
Health Professions
Mount Auburn Hospital
- Sandra J. King, B.S. *
Information Systems
Data General
- Charles S. Kinney, M.Ed.
Health Professions
Lahey Clinic
- Gary F. Kinsella, M.A.
Political Science
Northeastern University
- Paul G. Kinsella, B.S. *
Real Estate
Paul G. Kinsella Real Estate Appraiser & Consultant
- Virginia K. Kirshner, B.A. *
Drama/Speech
Lincoln-Sudbury Regional High School
- Arnold F. Kirsten, M.A.
Marketing
Zayre Corporation
- Yussuf N. Kly, M.A.
Political Science
Northeastern University
- Claire E. Knox, M.S.
English
Chamberlain School of Retailing
- John L. Kobrick, Ph.D. *
Psychology
U.S. Army Rsch. Inst. Envir. Med.
- Bernhard J. Kohler, M.B.A.
Industrial Management
Polaroid Corporation
- Walter C. Kohler, B.S.
Industrial Management
Fireman's Fund, Amer. Ins. Co.
- Arthur J. Komar, Ph.D.
Music
Northeastern University
- Gerald P. Koocher, Ph.D.
Psychology
Children's Hospital
- Pavel Kovaly, Ph.D.
Philosophy/Religion
Northeastern University
- Bennett L. Kramer, M.B.A.
Information Systems
Massasoit Community College
- Donald J. Kramer, M.B.A. *
Finance
Hendrix Electronics Inc.
- Joseph A. Krasowski, M.S.
Chemistry
Northeastern University
- Ernest A. Kraus, M.S.W.
Therapeutic Recreation
Ernest A. Kraus, Private Cons.
- David H. Kravetz, J.D. *
Law
Widett, Widett, Slater & Gol
- Jane M. Kretchman, B.S.
Health Professions
Lasell Junior College
- Donald F. Krier, Ph.D. *
Economics
Frammingham State College
- Bruce G. LaFlamme, M.S.W.
Health Professions
Mass. Dept. of Mental Health
- Robert A. LaFrance, Jr., B.A.
Biology
Northeastern University
- Sherry W. Lamade, B.S.
Health Professions
Jordan Hospital
- Michael Lambert, M.D.
Health Professions
Fenway Community Health Ctr.
- Paul K. Lambert, M.B.A. *
Transportation
Consultant
- James F. Lancaster, C.A.G.S.
Personnel and Industrial Relations
New England Mutual Life
- Stephen R. Lancey, M.A.
Psychology
Braintree Hospital
- Nelson P. Lande, M.A.
Philosophy/Religion
Northeastern University
- Robert H. Landry, M.B.A. *
Accounting
Massasoit Community College
- Harlan L. Lane, Ph.D.
Psychology
Northeastern University

- Philip J. Lane, M.A.
Economics
Tufts University
- Janet D. Lapey, Ph.D.
Cytotechnology
New England Deaconess Hospital
- Clifford R. Larson, M.B.A.
Finance
C. R. Larson Insurance Agency, Inc.
- John N. Larson, B.A.
Biology
Northeastern University
- R. J. M. Lavizzo-Mourey, M.A.
Anthropology/Sociology
Boston College
- Gerard J. Lavoie, M.P.A.
Law Enforcement
Northeastern University
- Kenneth Lavoie, B.S.
Information Systems
Honeywell
- Joan D. Laxson, Ph.D.
Anthropology/Sociology
Northeastern University
- Joseph Laznow, M.S.
Earth Science
Yankee Atomic Electric Co.
- Alfred Lazzeri, M.F.A.
Art
School Dept.
- Edward J. Leach, J.D.
Law Enforcement
Revere Police Department
- Morris G. Learner, LL.B.
Insurance
- Stewart L. Lebo, M.S.
Information Systems
First National Bank
- Patricia A. Lee, B.A.
Health Professions
Children's Hospital
- Susan F. Lee, M.S.
Drama/Speech
Mass. Bay Community College
- Walter J. Lee, M.S.
Biology
Northeastern University
- Roger J. F. Lehrberg, J.D.
Real Estate
Goldstein & Winnick
- Lila Leibowitz, Ph.D.
Anthropology/Sociology
Northeastern University
- Leonard L. Leinonen, M.S.
Industrial Management
Polaroid Corp.
- D. Paul Leitch, Ph.D.
Psychology
U.S. Army Natick R&D Command
- Bernard J. Lemire, B.S.
Chemistry
Northeastern University
- Ralph T. Lepore, Jr., B.S.
Law Enforcement
Swansea Police Department
- Marvin X. Lesser, Ph.D.
English
Northeastern University
- Joseph E. Levangie, M.B.A.
Marketing
Northern Energy
- Dale F. Levering, Jr., Ph.D.
Biology
Northeastern University
- Evelyn D. Levin, M.B.A.
Political Science
Cape Cod Development Comm.
- Jack Levin, Ph.D.
Anthropology/Sociology
Northeastern University
- Joseph Levine, Esq., J.D.
Journals
Joseph Levine, Esq., Attorney
- Sharon G. Levine, M.A.
Anthropology/Sociology
- Barbara Levitt, B.A.
Psychology
Northeastern University
- Ellen S. Liberman, M.S.
Biology
Forsyth Dental Institute
- Robert C. Lieb, D.B.A. *
Transportation
Northeastern University
- Kenneth E. Lindauer, Esq., J.D.
Political Science
Dr. Kenneth E. Lindauer, Esq.
- Joanne G. Linowes, M.S.
Drama/Speech
Mass. Educational Television
- Louis Lippiello, Ph.D.
Chemistry
Mass. General Hospital
- Robert L. Litrownik, Ph.D.
Psychology
Taunton State Hospital
- Marcia M. Littlefield, M.A.
Drama/Speech
Northeastern University
- Thomas E. Littlehale, M.Ed.
Information Systems
John Hancock Life Ins.
- Leo Litwin, M.A.
Music
Leo Litwin Piano Studios
- Cheryl S. Lloyd, B.S.
Therapeutic Recreation
Mass. Rehabilitation Hospital
- J. Anthony Lloyd, M.A. *
English
Mass. Eye and Ear Infirmary
- Margaret A. Lloyd, Ph.D.
Psychology
Suffolk University
- Joseph S. Locastro, Ph.D.
Psychology
Boston V.A. Hospital
- John S. Locke, B.S.
Chemistry
Northeastern University
- Bruce M. Logan, M.A.
Political Science
M.I.T.
- Richard C. Logan, B.A.
Health Professions
The Memorial Hospital
- James A. Lomastro, Ph.D.
Health Professions
Northeastern University
- Edward J. Lonczak, M.B.A. *
Management
Commercial Union Assurance
- Donald W. Lovejoy, Ph.D.
Earth Science
Bentley College
- Miller C. Lovett, Ph.D.
Management
Boston State College
- Hope E. Luder, M.A.
History
Burlington High School
- John J. Lyons, M.A.
Law Enforcement
Retired
- Paul E. Lyons, B.S. *
Industrial Management
Gillette Company
- Robert L. Mabardy, M.B.A.
Personnel and Industrial Relations
J.F. White Contracting Co.
- Andrew C. MacAulay, M.S. *
Chemistry
N.E. Medical Center Hospital
- Edward R. MacCormack, M.P.A.
Law Enforcement
Edison Electric Company
- Thomas J. MacDonough, M.A.
History
Town of Norwood
- Alan A. Mackey, A.M.
Law Enforcement
Northeastern University
- Lloyd J. MacKillop, B.S.
Purchasing
M.B. Claff
- Sylvia A. MacPhee, M.S.
Anthropology/Sociology
- George A. Macrina, M.S.
Industrial Management
Polaroid Corp.
- William J. Madden, A.B. *
Accounting
Office of Naval Research
- Stephen A. Madison, M.A.
Chemistry
Northeastern University
- Anne M. Magee, B.S.
Reading
Northeastern University
- Judith P. Magidson, M.Ed.
Reading
Y.M.C.A.
- Ann Marie Maguire, Esq., J.D.
Health Professions
Commonwealth of Massachusetts
- Gerard E. Maguire, M.B.A. *
Purchasing
R.C.A. Corp.
- John A. Maguire, B.S.
Information Systems
Mass. General Hospital
- Thomas J. Maguire, J.D. *
Law Enforcement
Retired
- Gael L. Mahoney, B.A.
Biology
Northeastern University
- Paul F. Mahoney, J.D.
Law Enforcement
Attorney Mahoney's Office
- Robert A. Maibor, M.B.A.
Accounting
N.Y. Life Ins. Co.
- Robert E. Mairs, B.S.
Personnel and Industrial Relations
Revere Sugar Refinery
- Robert G. Mallion, M.Ed.
Earth Science
Stoneham Public Schools
- Lorin M. Maloney, M.Ed.
History
Winchester High School
- Nancy J. Mandell, M.A.
Anthropology/Sociology
Northeastern University
- Jeremiah J. Manfra, B.S.
Law Enforcement
Boston Police Dept.
- Rami S. Mangoubi, M.S.
Management Sciences
Massachusetts Institute of Technology
- George J. Manikas, B.S.E.E.
Law Enforcement
Raytheon Company
- Bernard Manning, J.D.
Law Enforcement
Dept. of Attorney General
- John P. Manning, B.S.
Law Enforcement
Honeywell Info. Systems Inc.
- Thomas D. Manning, B.S.
Law Enforcement
F.B.I. (Retired)
- Albert R. Manson, M.Ed. *
Information Systems
Honeywell Info. Systems Inc.
- Jack J. Manuel, Ph.D. *
Philosophy/Religion
Creative Humanistics Inc.
- John A. Manzo, Jr., M.S.
Industrial Management
New England Medical Center Hospital
- Frederic March, M.C.E.
Industrial Management
TBF Scientific Corp.

*Denotes senior lecturer as of October, 1978.

- Neli Margolis, J.D.
Finance
New England Mutual Life Insurance Co.
- Julius Mariasis, M.Ed. *
Management
Astamar, Inc.
- Arnold M. Marrow, Esq., LL.B.
Personnel and Industrial Relations
National Labor Relations Board
- Barbara E. Martin, B.A.
Health Professions
Northeastern University
- James J. Martin, M.P.A.
Law Enforcement
Mass. State Police
- John A. Martin, M.B.A.
Accounting
Northeastern University
- John F. Martin, M.S.
Industrial Management
John F. Martin Assoc.
- John J. Martin, B.S. *
Personnel and Industrial Relations
Federal Mediation & Conciliation Serv.
- Leo J. Martin, B.S.
Law Enforcement
General Services Administration
- Zareh Martin, M.Ed. *
Industrial Management
Department of Education
- Paul T. Martindale, M.A.
Biology
Northeastern University
- Robert L. Marzelli, J.D.
Accounting
Attorney
- Frederick J. Mason, Jr., B.S. *
Accounting
Internal Revenue Service
- Richard P. Mason, M.B.A.
Information Systems
Avco Corporation
- Russell B. Mason, M.B.A. *
Marketing
Raytheon Company
- Burton N. Matross, M.B.A.
Information Systems
General Electric Company
- George D. Matson, M.A.
Drama/Speech
WMUR-TV
- Paul F. Matthews, B.S.
Law Enforcement
Massachusetts State Police Academy
- Suenje Mathiesen, M.S.W.
Therapeutic Recreation
Children's Hospital Medical Center
- Kevin E. Maute, M.S.
Biology
Northeastern University
- Paul D. Maxwell, M.B.A. *
Management
Northeastern University
- Cynthia Mayher, M.S.
Health Professions
Northeastern University
- Teresa A. Mayors, B.A.
Anthropology/Sociology
Northeastern University
- James J. Mazza, M.P.A.
Law Enforcement
Woburn Police Department
- Carol K. McAuliffe, J.D.
Law
Hutchings, Kopelman & Callahan PC
- Gerard S. McAuliffe, J.D.
Attorney
Northeastern University
- Robert P. McAuliffe, M.B.A. *
Marketing
Genrad, Inc.
- Anthony L. McCall, M.D.
Health Professions
M.I.T.
- Larry D. McCargar, Ph.D.
Philosophy/Religion
- Daniel J. McCarthy, D.B.A. *
Management
Northeastern University
- William S. McCarthy, J.D.
Law Enforcement
Claims Bureau
- Joan C. McCartney, M.S.
Biology
Northeastern University
- John E. McCormack, M.B.A.
Accounting
Youville Hospital Inc.
- Joseph F. McCormack, Ed.M.
Law Enforcement
Criminal Justice Consultant
- Leo F. McCue, Jr., M.A.
History
- James F. McDermott, M.B.A.
Accounting
Bentley College
- Andrew J. McDonough, B.S. *
Insurance
Appleby & Wyman, Inc.
- Earl E. McEvoy, M.B.A.
Finance
Thorndike, Doran, Paine & Lewis
- David A. McGaughey, M.B.A. *
Management Sciences
Ark-Less Switch Corporation
- John B. McGrath, B.S. *
Finance
New England Telephone & Telegraph
- James L. McGuinness, Jr., M.B.A. *
Accounting
E.G. & G., Inc.
- Thomas J. McHugh, M.B.A. *
Finance
Consultant
- William E. McHugh, M.S.
Purchasing
R.C.A. Corporation
- Frederick L. McKenney, J.D.
Real Estate
Frederick L. McKenney
- Marlene M. McKinley, Ph.D.
English
- Susan E. McKinnon, B.S.
Biology
Northeastern University
- Charles M. McLean, M.P.A.
Law Enforcement
Natick Police Department
- Olaf R. McLetchie, M.D.
Health Professions
Harvard School of Public Health
- Paul F. McManus, B.S.
Information Systems
John Hancock Mutual Life Insurance Co.
- Leonard F. McNally, B.A.
Biology
Northeastern University
- Thomas J. McNamara, B.S. *
Information Systems
Honeywell Information Systems, Inc.
- Richard J. McNeil, Jr., M.B.A. *
Economics
Northeastern University
- Joseph P. McParland, J.D.
Law Enforcement
Attorney
- Herbert L. Meiselman, Ph.D.
Psychology
U.S. Army, Natick Labs
- Paula M. Melcher, M.S.
Health Professions
Malden Hospital
- Frank D. Mele, B.S.
Accounting
Internal Revenue Service
- Craig N. Melin, M.B.A.
Health Professions
Beth Israel Hospital
- Bruce A. Mellin, M.S.
Earth Science
Town of Chelmsford
- Arnold R. Meltzer, Esq., M.B.A.
Purchasing
Basic Marketing Services
- Deirdre C. Menoyo, M.A.
English
- Kenneth C. Mermer, B.S.
Health Professions
Nevins Home, Inc.
- George B. Merry, A.B.
Journalism
Christian Science Publ. Society
- Charles A.M. Meszoely, Ph.D.
Biology
Northeastern University
- Michael W. Metzler, M.A.
Personnel and Industrial Relations
Stop & Shop Companies, Inc.
- Elmer B. Michelson, M.A. *
English
Boston Conservatory of Music
- Stephen R. Miller, M.S.
Library Science
Wellesley Free Library
- Helena C. Minton, M.F.A.
English
Cambridge School
- Richard R. Miranda, M.B.A.
Purchasing
Multibank Financial Corp.
- Nityananda Misra, M.B.A.
Industrial Management
Dennison Manufacturing Company
- James R. Mitchell, Esq., M.A.
Music
Northeastern University
- James A. Molloy, B.A.
Transportation
Tranco, Inc.
- James F. Molloy, Jr., M.B.A.
Transportation
Tranco, Inc.
- Patricia A. Moore, M.A.
Health Professions
Mt. Auburn Hospital
- Leslie B. Morash, M.B.A. *
Transportation
Service Warehouse Co.
- Norman R. Moray, Jr., LL.B. *
Management Sciences
Hartford Insurance Group
- Jerry A. Morris, M.B.A. *
Personnel and Industrial Relations
Ittek Corporation
- Norman Morris, LL.B.
Accounting
Audit Consultation & Trng.
- Richard M. Morrison, M.B.A. *
Information Systems
Strategic Planning Institute
- William E. Morrison, Jr., M.B.A.
Personnel and Industrial Relations
American Management Assoc.
- Mark B. Moss, M.A.
Psychology
Kent J. Mottie, B.S.
- Kent J. Mottie, B.S.
Chemistry
Northeastern University
- James D. Mukjian, M.B.A. *
Industrial Management
L.E. Muran Co.
- Bruce L. Muldoon, M.S.
Earth Science
Town of Wellesley
- James W. Mulford, B.S.
Law Enforcement
First District Court of N. Middlesex
- Paul V. Mulkern, M.S. *
Personnel and Industrial Relations
U.S. Department of Labor

- Francis E. Mullen, B.S.
Law Enforcement
Quincy Police Dept.
- William S. Mullen, M.A.
Political Science
Fosboro School System
- Bianca M. Murphy, C.A.G.S.
Psychology
Womanspace Feminist Therapy
Collective
- Charles W. Murphy, M.B.A.
Finance
Bunker Hill Community Coll.
- James F. Murphy, B.S.
Law Enforcement
Haverhill Police Department
- Paul J. Murphy, M.B.A. *
Management
General Electric Company
- Roland L. Nadeau, M.A. *
Music
Northeastern University
- Robert P. Najjar, M.B.A. *
Accounting
Northeastern University
- James M. Nardone, M.B.A.
Purchasing
AVCO Corporation
- Shashi Nath, Ph.D. *
Anthropology/Sociology
- Alvin S. Nathanson, Esq., J.D.
Real Estate
Kabatnick Stern & Copper
- Mark A. Nathanson, Ph.D.
Biology
Harvard Medical School
- Marie D. Natoli, Ph.D.
Political Science
Emmanuel College
- Theodore H. Needle, B.S. *
Accounting
Needle & Needle
- Paul A. Neeson, B.A.
Insurance
Fred S. James & Co., Inc.
- Mark A. Nelles, M.S., M.E.
Marketing
York Division-Borg Warner
- David C. Nelson, B.S.
Accounting
David C. Nelson
- Margaret W. Nelson, M.A.
English
John N. Nestor, J.D.
- John N. Nestor, J.D.
Law Enforcement
- Paula A. Newcomb, M.S.
Therapeutic Recreation
Northeastern University
- Mary E. Newman, M.Ed.
English
William A. Newman, Ph.D.
- William A. Newman, Ph.D.
Earth Science
Northeastern University
- Thomas J. Neylon, Jr., M.A.
English
Watertown Public Schools
- Bruce E. Nickerson, Ph.D.
Anthropology/Sociology
Contract Research Corp.
- James S. Nicolson, M.A.
Music
Northeastern University
- Alicia K. Nitecki, Ph.D.
English
Maurice J. Nolan, J.D.
- Maurice J. Nolan, J.D.
Personnel & Industrial Relations
Raytheon Company
- Donald C. Norris, Ph.D.
Philosophy/Religion
Harvey Industries, Inc.
- Richard W. Norton, B.A. *
Information Systems
The Foxboro Company
- Edward G. Novello, B.S. *
Transportation
Best T & D Associates
- Norbert F. Nunes, M.A. *
English
Massachusetts Bay Community Coll.
- Godwin A. Nweke, Ph.D.
Political Science
Harvard University
- David H. O'Brien, M.B.A.
Accounting
New England Merchants Bank
- John J. O'Brien, B.A.
Insurance
Continental Insurance Co.
- Paul D. O'Brien, J.D.
Law Enforcement
General Electric Company
- Robert B. O'Brien, M.B.A.
Accounting
The Kennedy Center
- Robert M. O'Brien, B.S.
Information Systems
Northeastern University
- William D. O'Brien, M.P.A.
Law Enforcement
Boston Police Department
- John J. O'Callaghan, J.D.
Law Enforcement
Suffolk University
- Frederick T. O'Connell, J.D.
Accounting
Internal Revenue Service
- Gerard J. O'Connell, Jr., J.D.
Finance
Honeywell Information Systems Corp.
- Daniel F. O'Connor, M.S.
Information Systems
Northeastern University
- Edward T. O'Donnell, M.B.A.
Economics
Retired
- John J. O'Donnell, M.B.A.
Information Systems
Massachusetts General Hospital
- Aileen J. Oler, M.A.
English
Kathleen J. O'Hara, B.S.
- Kathleen J. O'Hara, B.S.
Health Professions
Needham Public Schools
- Joseph A. O'Keefe, M.Ed.
Law Enforcement
Department of Public Safety
- Kay B. O'Laughlin, M.Ed.
Reading
Boston University
- Harry Olins, Esq., J.D. *
Law
Attorney
- Ernest Oliveira, Jr., M.B.A.
Industrial Management
General Electric Company
- Jon J. Oliver, M.A.
Therapeutic Recreation
Creative Educational Association
- Wayne J. Oliver, M.A.
Economics
Northeastern University
- Gerald F. Olsen, M.B.A.
Accounting
Raytheon Company
- George C. Olson, M.B.A.
Information Systems
Home Savings Bank
- David S. Omar, M.Ed.
Economics
Dean Junior College
- James E. O'Neil, J.D.
Accounting
Internal Revenue Service
- James W. O'Neil, A.B.
Law Enforcement/Security
Security Consultant
- John P. O'Neill, M.B.A.
Law Enforcement
- Marc P. Onigman, M.A.
History
Northeastern University
- George J. O'Shea, Jr., M.S.W.
Law Enforcement
Div. of Youth Service
- Richard H. O'Shea, M.P.A.
Law Enforcement
Massachusetts State Police
- Lawrence Osterweil, B.A.
Health Professions
Prospect Nursing Home Corp.
- Albert J. Ottariano, M.B.A. *
Economics
U.S. Department of Labor
- J. Rosson Overcash, M.A. *
Earth Science
Bunker Hill Community College
- Carol A. Owen, Ph.D.
Anthropology/Sociology
Northeastern University
- Richard W. Paine, Ph.D.
Psychology
Michael S. Paisner, J.D.
- Michael S. Paisner, J.D.
Purchasing
M.S. Paisner, Inc.
- Alice T. Paley, M.Ed.
Psychology
Lesley College
- Howard R. Palmer, J.D. *
Law Enforcement
Attorney General's Office
- Leo Panas, M.S.
Art
Lowell State College
- Judith M. Pariseau, B.S.
Biology
Northeastern University
- Beverly W. Parry, M.Ed.
Therapeutic Recreation
Hogan Regional Center
- Robert A. Parsons, M.A. *
Management Sciences
Northeastern University
- Paul S. Paslaski, M.B.A.
Information Systems
Harvard University
- Theodore C. Patrikas, B.S.
Management
General Electric Company
- David F. Pauling, M.A.
Modern Language
Northeastern University
- Nancy Payne, M.B.A.
Women's Programs
Massachusetts General Hospital
- Joseph V. Pearincott, Ph.D.
Biology
Northeastern University
- Marilyn P. Pedalino, M.S.
Drama/Speech
Boston College
- Joseph C. Pedula, B.S.
Personnel and Industrial Relations
Gillette Company
- Robert A. Pelletier, B.S.
Information Systems
Commercial Union Assurance Co.
- Martin L. Pendleton, Jr., B.S. *
Information Systems
Independent Consultant
- Philip W. Pendleton, Ph.D.
Psychology
Northeastern University
- Carroll E. Pennell II, M.B.A.
Real Estate
New England Merchants Natl. Bank
- William A. Percy, Ph.D. *
History
Univ. of Massachusetts, Boston
- Philip P. Perry, M.A.
Law Enforcement
Filene's Department Store
- Daniel Pershonok, Ph.D. *
Psychology
Harvard Medical School

*Denotes senior lecturer as of October, 1978.

- Lucretia Peteros, M.S.
Anthropology/Sociology
Graham Junior College
- Frederick D. Peterson, M.A.
Anthropology/Sociology
Merrimack College
- Ausrele M. Petronis, M.A. *
English
- Marie J. Philip, B.A.
Psychology
Northeastern University
- James J. Phillips, Ph.D.
Anthropology/Sociology
American Friends Service Committee
- George G. Pierce, J.D. *
Law
United States Government
- Benjamin E. Pike, M.S. *
Personnel and Industrial Relations
Massasoit Community College
- Joseph G. Pike, M.A.
Health Professions
McLean Hospital
- Gerald T. Pineault, M.B.A.
Industrial Management
Polaroid Corporation
- Garth I. Pitman, M.A. *
English
Northeastern University
- Carmen S. Pizzuto, Ph.D.
Law Enforcement
Div. of Youth Service
- Jacqueline Platt, M.Ed.
Women's Programs
Northeastern University
- Howard Poizner, M.A.
Psychology
Northeastern University
- Gladys M. Polansky, M.A.
English
- Nathan Polen, M.Ed.
Philosophy/Religion
Congregation Tifereth Israel
- Michael A. Porges, M.B.A.
Finance
The Gillette Company
- John D. Post, Ph.D. *
History
Northeastern University
- Sylvia Poster, M.B.A.
Management
Consultant
- James E. Poulos, M.A.
English
Newbury Junior College
- Edward J. Powers, M.Ed. *
Industrial Management
Self-Employed
- Stephen J. Powers, M.S.
Management Sciences
Ford Aeronautics
- John T. Prendergast, J.D.
Law Enforcement
Department of Public Safety
- Edward V. Puopolo, J.D. *
Law
Sloane, Puopolo & Carr, Attys.
- Carlton Purcell, M.B.A.
Information Systems
Maseonelan International
- Chitra Raghavan, M.S.
Biology
Metcalf and Eddy
- Mohamed A. Rahman, M.A.
Economics
Northeastern University
- Allan L. Raisman, B.A.
Biology
Bioran Medical Labs
- Jonathan E. Rakin, B.S.
Economics
Northeastern University
- Daniel Rakov, Esq., J.D.
Real Estate
Rappaport & Rakov
- Robert W. Ramage, Jr., M.B.A.
Finance
First Natl. Bank of Boston
- William Ramaskewich, B.S.
Therapeutic Recreation
The Education Coop.
- Malati Ramratnam, Ph.D.
English
- Lewis M. Randa, B.S.
Therapeutic Recreation
The Kennedy Memorial Hospital
- Denise C. Ratliff, B.S.
Therapeutic Recreation
Northeastern University
- Nathaniel C. Raymond, Ph.D.
Anthropology/Sociology
Boston State College
- James H. Reeves, B.A.
Chemistry
Northeastern University
- Denis G. Regan, Esq., J.D. *
Law
Attorney
- John F. Regan, B.S.
Law Enforcement
Department of Public Safety
- Richard M. Regan, LL.B.
Personnel & Industrial Relations
State Street Bank & Trust Co.
- Charles W. Reilly, M.A. *
English
Northern Essex Community Coll.
- Philip J. Reilly, Jr., J.D.
Law Enforcement
Dept. of Public Safety
- Stewart Reiser, Ph.D.
Political Science
Northeastern University
- Frank C. Renew, Jr., M.A.
Psychology
Northeastern University
- Alice E. Richmond, J.D.
Law Enforcement
Attorney at Law
- Herbert L. Richmond, C.A.G.S.
Therapeutic Recreation
Area II, Homecare Senior Citizen
- Frederick W. Riley, J.D.
Law Enforcement
Suffolk County Dist. Atty's Office
- J. Scott Riley, B.S.
Marketing
J.S.R. Associates Inc.
- William J. Riley, M.Ed.
Law Enforcement
Brookline Police Department
- Frank M. Robinson, Jr., M.S.
Therapeutic Recreation
Northeastern University
- Nelson Buck Robinson, J.D.
Industrial Management
Essex County Ecology Ctr., Inc.
- Raymond H. Robinson, Ph.D.
History
Northeastern University
- Leo F. Roche, Jr., LL.B.
Finance
Darling & McLaughlin
- John L. Roebber, Ph.D.
Chemistry
Northeastern University
- Cephas B. Rogers, M.B.A.
Industrial Management
Polaroid Corporation
- Ralph V. Rogers, B.A.
Anthropology/Sociology
Boston City Hall
- Theodore Role, M.A.
Personnel & Industrial Relations
Arbitrator
- Irene L. Roman, M.Ed.
Accounting
Newton North High School
- Lawrence J. Romano, M.A.
Modern Language
Charles Stark Draper Lab., Inc.
- Robert N. Romanowski, B.S.
Law Enforcement
First Security Services Corp.
- Linette Ronkin, B.A.
Biology
Northeastern University
- Robert D. Ronsheim, M.A.
History
- Fred A. Rosenberg, Ph.D.
Biology
Northeastern University
- Morris E. Rosenberg, B.A.
Accounting
Consultant
- Joel M. Rosenfeld, M.S. *
Industrial Management
American Computer Group, Inc.
- Alan M. Rosenwasser, M.A.
Psychology
Northeastern University
- Albert H. Ross, Esq., J.D.
Personnel & Industrial Relations
U.S. Department of Labor
- David Ross, M.S.
Management Sciences
Gillette Company
- Robert J. Roth, B.S.
Law Enforcement
Retired
- Richard N. Roy, M.B.A.
Transportation
Stone & Webster Eng. Corp.
- Gary D. Ruben, M.A.
Psychology
Northeastern University
- Gerald R. Rubin, B.S.
Accounting
Green, Rubin, Gilburd & Miller
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Modern Language
Northeastern University
- Thomas J. Rudegear, Ph.D.
Biology
Self-Employed
- Louis Rudzinsky, B.S.
Personnel & Industrial Relations
Louis Rudzinsky Assoc., Inc.
- Adrian Ruth, M.A.
Anthropology/Sociology
National Organization of Women
- Edward F. Ryan, B.S.
Law Enforcement
Revere Police Department
- Frank L. Ryan, Ph.D.
English
Stonehill College
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Law Enforcement
Correctional Consultant
- John D. Ryder, M.S.
Accounting
SCA Services, Inc.
- Frederick J. Rys, M.B.A.
Finance
New England Telephone Co.
- Charles L. Saccardo, Jr., M.A.
Economics
University of Lowell
- Carol Saffran, B.S.
Economics
Northeastern University
- Charles L. Sakey, M.A.
Modern Language
City of Boston
- George J. Salm, B.A.
Political Science
Northeastern University
- Mary E. Salus, M.A.
Anthropology/Sociology
Massachusetts Dept. Public Welfare
- James B. Sampson, Ph.D.
Psychology
U.S. Army Rsch. Inst. Envir. Med.

- Gary R. Sanford, Ph.D.
Biology
Wellesley College
- Joan K. Santos, B.A.
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Northeastern University
- Willis L. Saulnier, M.S.W.
Personnel and Industrial Relations/
Women's Programs
Raytheon Company
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Northeastern University
- Gustav Schachter, Ph.D.
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Natl. Labor Relations Board
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Solomon Fuller Mental Health Center
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Suffolk University
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- Samuel Shapiro, M.B.A.
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Samuel Shapiro & Co., Inc.
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Radcliffe College
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Psychology
Northeastern University

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District Ct. of Central Middlesex
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U.S. Postal Service
- Cornelius J. Sullivan, J.D.
Law Enforcement
Attorney
- Jeremiah G. Sullivan, B.S.
Information Systems
Data Terminal Systems, Inc.
- John F. Sullivan, B.S.
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Northeastern University
- Joseph L. Supple, A.B.
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Digital Equipment Corp.
- Wayne A. Sutcliffe, M.B.A.
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New England Merchants Natl. Bank
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Therapeutic Recreation
Massachusetts Rehabilitation Hosp.
- Larry N. Swanson, Pharm.D.
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Northeastern University
- John T. Sweeney, J.D.
Law Enforcement
Dept. of H.E.W.
- Joseph Sweeney, M.B.A.
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Gillette Company
- Allen M. Swenson, M.B.A.
Economics
Raytheon Company
- Richard G. Swenson, Ph.D.
Psychology
Harvard Medical School
- George J. Swidler, M.Ed.
Law Enforcement
Retired
- Lawrence E. Symington, Ph.D.
Psychology
U.S. Army, Natick Rsrch. Devel. Cm.
- Priscilla D. Taft, M.D.
Cytotechnology
Massachusetts General Hosp.
- Thomas J. Tagliamonte, M.B.A.
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New England Mutual Life Ins. Co.
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Northeastern University
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Accounting
Arthur Young & Company
- Sumner B. Tapper, M.Ed.
English
Stoughton High School
- Louise Tarsy, B.A.
Reading
Northeastern University
- Theodore A. Tasis, M.A. *
English
Raytheon Company
- Alan M. Tattle, M.Ed.
Information Systems
City of Lynn School Dept.
- Gloria J. Taylor, B.A.
Anthropology/Sociology
Boston Univ. Medical Center
- Paul H. Tedesco, Ph.D.
History
Northeastern University
- John B. Tessicini, M.B.A.
Personnel & Industrial Relations
Charles T. Main, Inc.
- Norman R. Tessier, M.Ed.
Accounting
Sch. Committee, City of Boston
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Music
- Salvatore A. Testaverde, M.Ed.
Earth Science
New England Aquarium
- Philip R. Tetu, J.D.
Law Enforcement
Tetu and Maiona
- Hartmut Teuber, M.A.
Psychology
Northeastern University
- Alan P. Thayer, Esq., M.B.A.
Economics
Boston College
- Emile F. Thibault, M.A.
Law Enforcement
Department of Public Safety
- Donald J. Thierne, M.B.A.
Finance
Ernst & Ernst
- Howard H. Thomas, M.S.
Biology
Northeastern University
- Ted Thomas, Jr., B.S.
Anthropology/Sociology
Northeastern University
- Wendy W. Thompson, M.Litt.
History
Lexington Public Schools
- Laura F. Tilden, M.A.
Political Science
Dare School
- Helene Tischler, B.A.
Reading
Northeastern University
- Henry L. Tischler, Ph.D. *
Anthropology/Sociology
Framingham State College
- Mark W. Tobin, B.A.
Health Professions
Ellis Nursing Home
- William J. Tobin, M.P.A.
Law Enforcement
Law Enforcement Consultant
- Ronald C. Tocci, B.S.
Accounting
Self-Employed
- Warren C. Tomkiewicz, Jr., M.S.
Earth Science
Needham High School
- Frank M. Tortora, M.A.
Economics
Northeastern University
- Victor H. Tose, M.B.A.
Accounting
Eastern Nazarene College
- Rosario J. Tosiello, Ph.D.
History
Pine Manor Junior College
- Allan Tosti, M.A.
Political Science
- Edward G. Trachtenberg, B.S.
Information Systems
Raytheon Company
- Joseph J. Travia, Jr., M.B.A.
Accounting
Teradyne, Inc.
- Gail L. Travis, M.A.
Anthropology/Sociology
Harvard Law School
- Joseph J. Trifero, B.S.
Transportation
Consultant
- Charles W. Trombly, Jr., J.D.
Real Estate
Commonwealth of Massachusetts
- Raymond Trudell, M.B.A.
Marketing
Polaroid Corporation
- James D. Turley, Ed.D.
English
Rhode Island College
- David W. Tutein, M.A.
English
Northeastern University
- Theresa H. Twombly, M.A.
Anthropology/Sociology
- John A. Tyrell, Ed. D.
Earth Science
Boston Public Schools
- Judith B. Ullman, M.A.
Psychology
Northeastern University
- Michael A. Vance, M.S.
Health Professions
Northeastern University
- Zebulon B. Vance, M.D.
Health Professions
N.E. Deaconess Hospital
- Joel I. Varnick, M.B.A.
Information Systems
Burroughs Corporation
- Larry E. Varon, M.Ed.
Chemistry
Northeastern University
- Alint V. Varughese, Ph.D. *
English
Bentley College
- John J. Vecchi, M.B.A.
Accounting
Greene & Veechi, CPAs
- Harvey Velstein, M.A.
English
Northeastern University
- Robert A. Vinson, M.A.
Economics
Northeastern University
- Robert F. Vitale, B.S.
Information Systems
Data General Corporation
- Philip M. Vitt, M.A.
Law Enforcement
Boston Police Department
- Florian J. Vonlmsdorf, A.M.
Philosophy/Religion
- Paula M. Vosburgh, M.S.
Health Professions
Catherine Laboure Jr. College
- Jeffrey L. Wain, M.S.
Biology
Northeastern University
- James F. Waldron, J.D.
Law Enforcement
Attorney at Law
- Paul M. Waldron, B.S.
Law Enforcement
M.C.I. Bridgewater
- James Walker, M.A.
Philosophy/Religion
- Herbert M. Wall, M.B.A.
Law Enforcement
Raytheon Company
- Beth V. Walman, M.A.
Psychology
E. K. Shriver Center
- Ann L. Walsh, B.S.
Health Professions
Northeastern University
- John H. Walsh, M.A.
History
Northeastern University
- Martin S. Walsh, M.A.
History
Dedham School Dept.
- Susan M. Walsh, A.S.
Information Systems
File's
- Robert L. Ward, M.Ed.
Law Enforcement
Boston Globe
- Frances R. Warshaw, M.A.
Biology
Lois D. Wasserman, Ph.D.
- Jenny L. Watson, M.Ed.
Therapeutic Recreation
Counseling Works, Inc.

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- Robert C. Webb, Ph.D.
Psychology
Suffolk University
- William S. Webb, M.A.
Law Enforcement
Danvers Police Department
- Frederick H. Weber, B.S. *
Biology
Northeastern University
- Judith Weilerstein, R.R.A., M.P.H.
Health Professions
Northeastern University
- Richard S. Wein, M.A.
Anthropology / Sociology
Winthrop High School
- Rhoda Weinman, M.B.A.
Personnel & Industrial Relations
Polaroid Corporation
- Karl Weiss, Ph.D.
Chemistry
Northeastern University
- Arthur J. Weitzman, Ph.D.
English
Northeastern University
- Daniel A. Welch, M.Ed.
Law Enforcement
Marshfield Police Department
- Robert L. Wells, M.A.
Art
Northeastern University
- Clifford H. Wenzel, A.B.
Personnel & Industrial Relations
Raytheon Company
- Paul C. Wermuth, Ph.D.
English
Northeastern University
- Robert L. Westwater, M.B.A.
Finance
Commercial Union Assurance Cos.
- Robert D. Whearty, B.S.
Law Enforcement
Sandwich Police Department
- Charles W. White, Ph.D.
English
Southeastern Massachusetts Univ.
- Margaret N. White, M.A.
Anthropology / Sociology
- Paul F. White, M.A.
Law Enforcement
Lakeside Office Park
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Accounting
Holdsworth, Parent & Co.
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Economics
Stonehill College
- Elizabeth S. Williams, M.Ed.
Psychology
Suffolk University
- Jayne B. Williamson, M.A.
History
- John Williamson, M.B.A.
Women's Programs
Raytheon Company
- David L. Wilmarth, Ph.D.
Earth Science
Northeastern University
- Alexander B. Wilson, M.A.
History
Alex Wilson Associates
- George R. Wilson, Jr., M.A.
History
Sunline Travel Service
- Leslie F. Wilson, M.F.A.
Law Enforcement
- Walter B. Winchenbach, Jr., M.B.A.
Industrial Management
Hewlett Packard Co.
- Roberta S. Winitzer, M.Ed.
Therapeutic Recreation
Counseling Works, Inc.
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Management
F.C.B. Leasing, Ltd.
- Burton Winnick, Esq., LL.B.
Real Estate
Goldstein & Winnick
- Gail S. Wintersteiner, Ph.D.
Philosophy / Religion
- Robert E. Withstandley, M.B.A.
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City of Worcester
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Political Science
Found. for Internatl. Criminal Ct.
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Health Professions
Massachusetts Bay Community Coll.
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Anthropology / Sociology
Northeastern University
- Robert R. Wolfe, Ph.D.
Biology
Massachusetts General Hosp.
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Drama / Speech
Northeastern University
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Massachusetts State Police
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Transportation
Knapp King Size Corporation
- Steve Worth, Ph.D.
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Northeastern University
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Management
U.S. Army, Natick Labs.
- Byron C. Yoburn, M.A.
Psychology
Northeastern University
- William T. Zadrozny, M.B.A.
Finance
Chase Manhattan Leasing Corp.
- Albert J. Zahka, Esq., J.D.
Law
First Nat'l Bank of Boston
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Psychology
Northeastern University
- Vance M. Zemon, M.A.
Psychology
Northeastern University
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Sperry Univac
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Boston College
- Thomas J. Zogby, M.B.A.
Marketing
Worcester Controls Corp.
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Northeastern University
- Jeffrey J. Zornitsky, M.A.
Economics
Boston Manpower

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May, 1979

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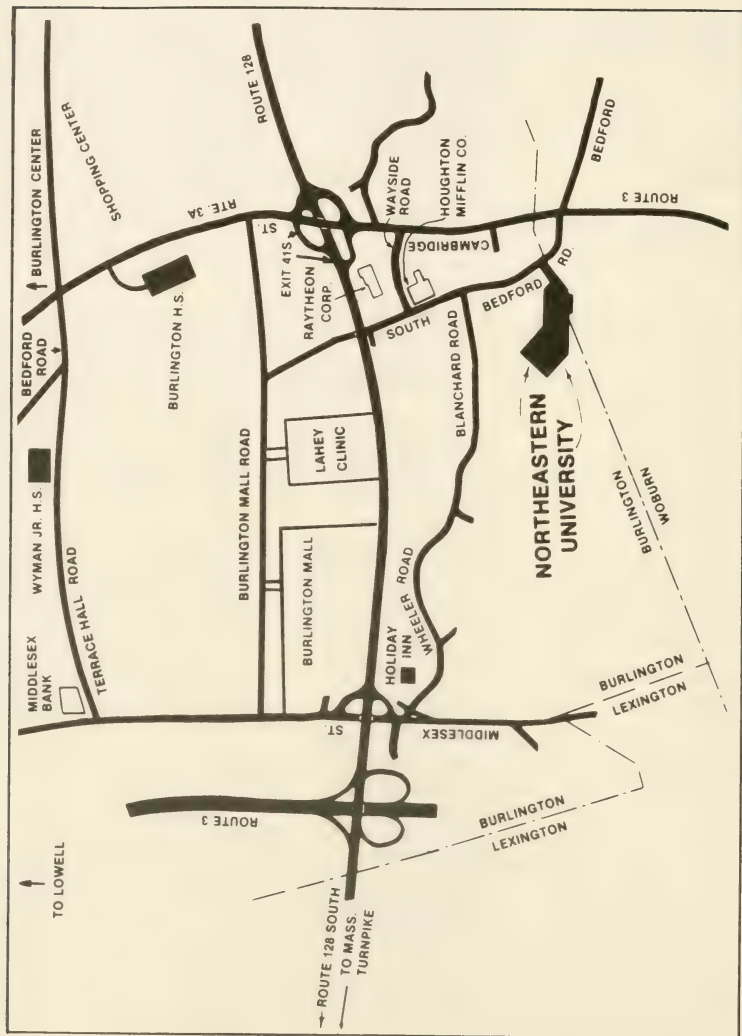
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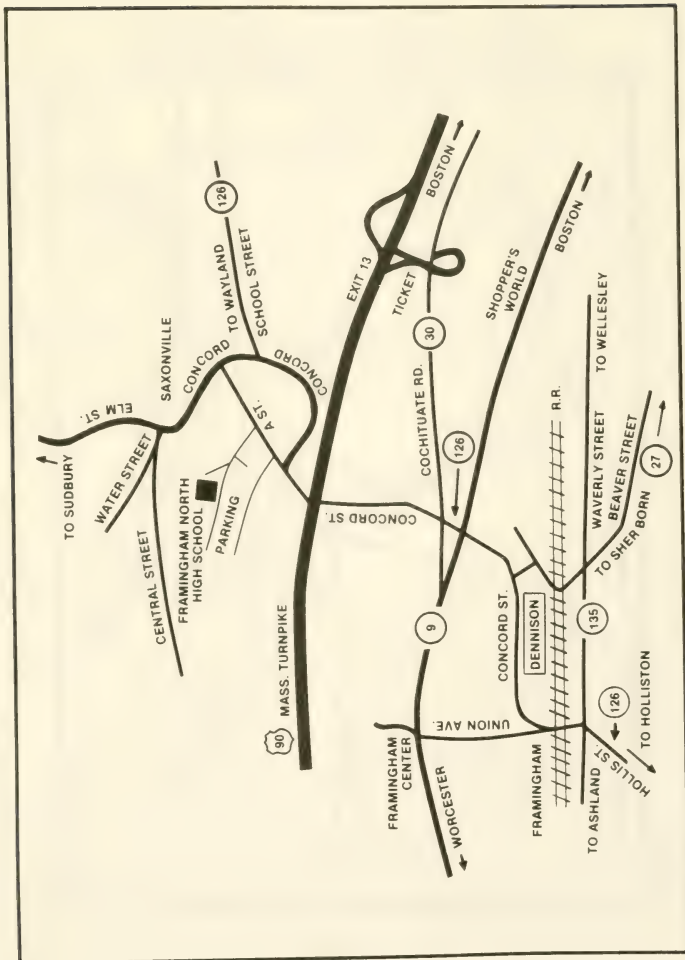
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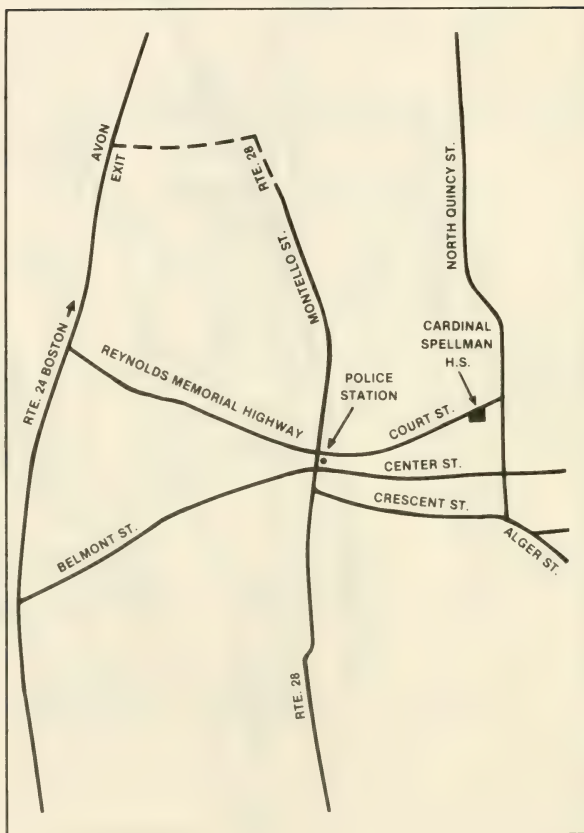
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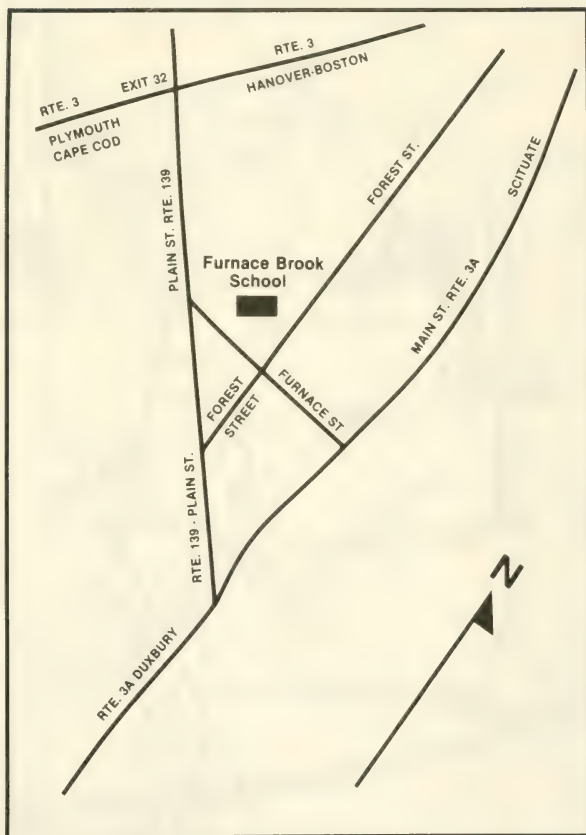
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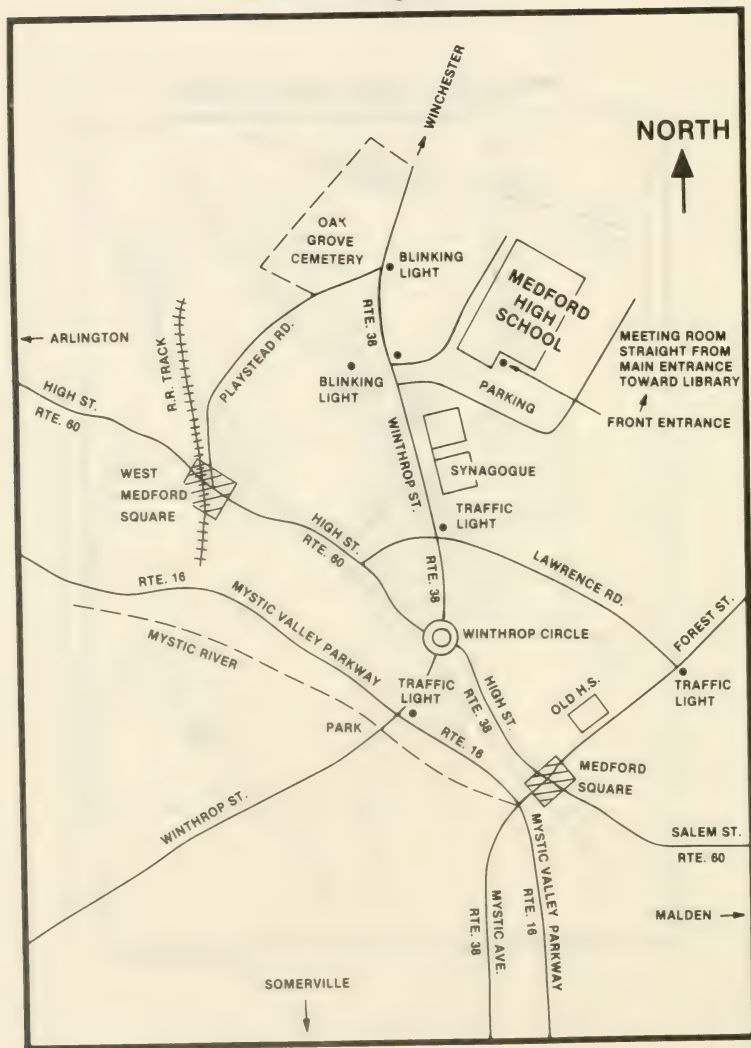
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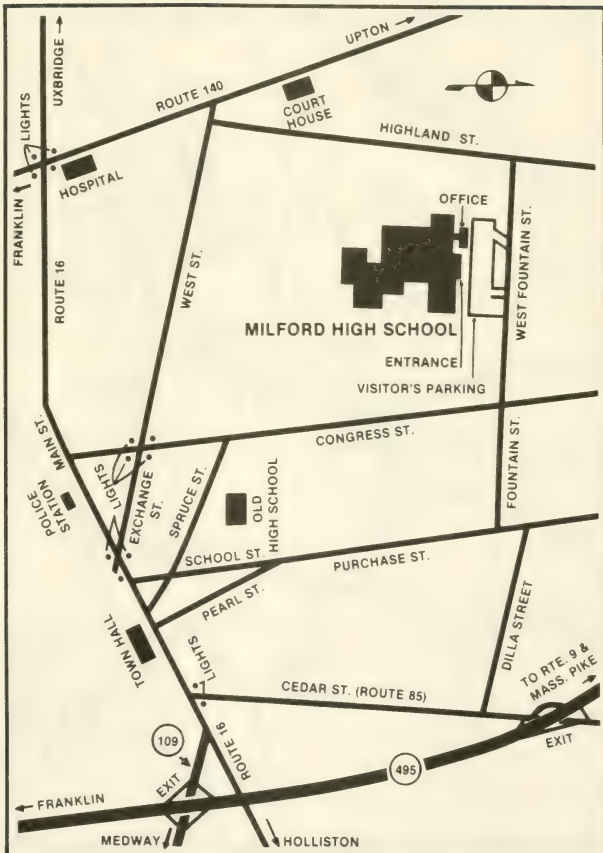
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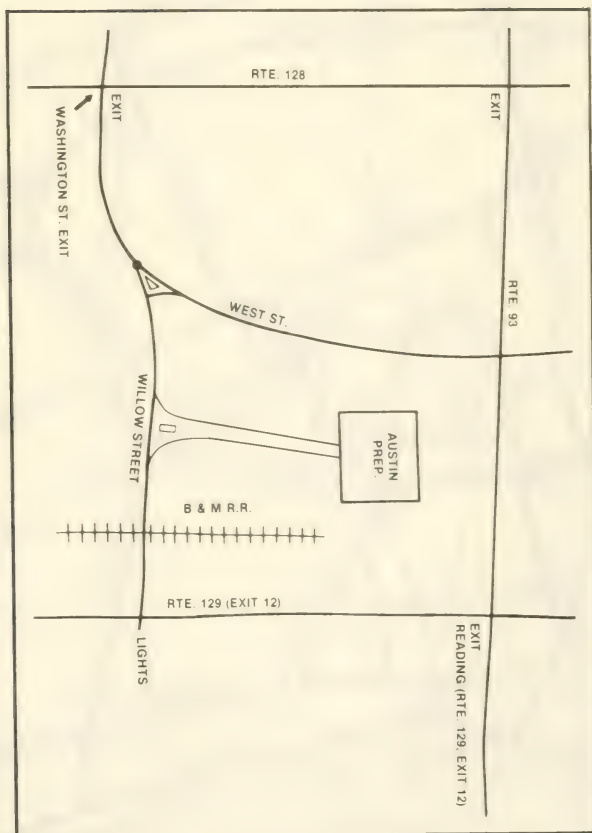
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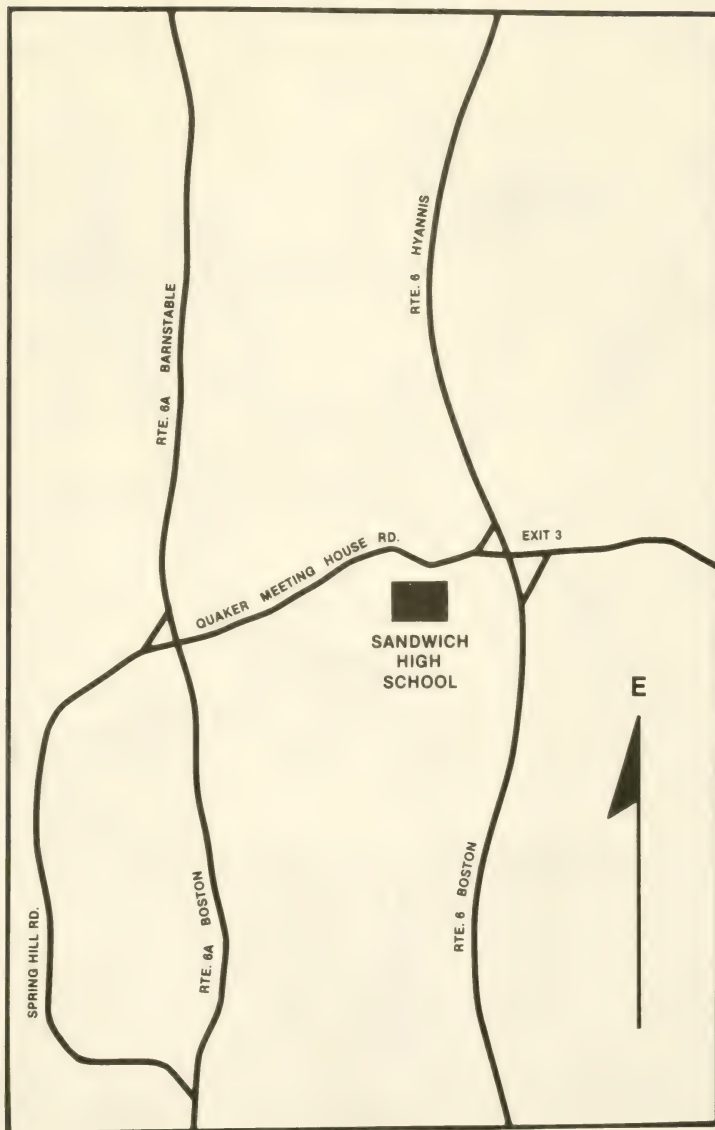
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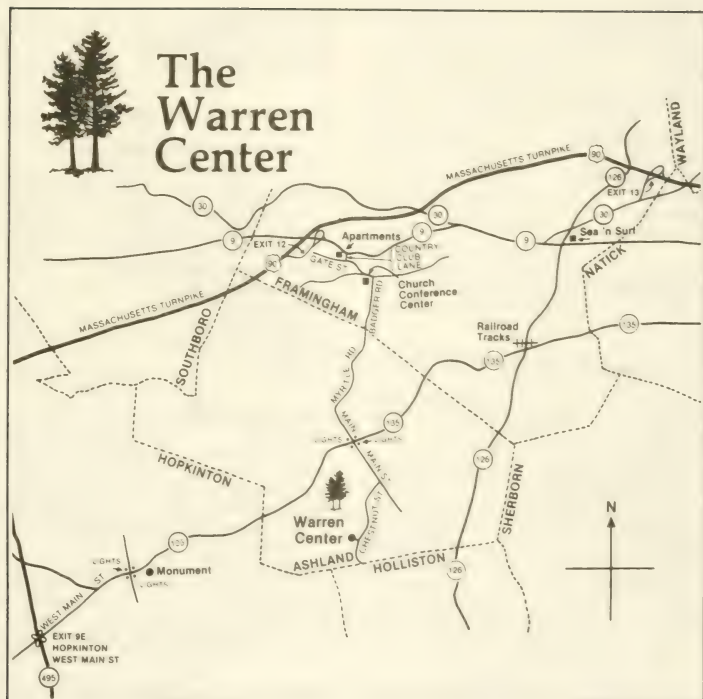


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